Revised Final Report

Transportation Impact & Parking Justification Study – 215 & 229 Lexington Road, Waterloo

Prepared for Hygate Development Corp.
by IBI Group
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1 Introduction

The Hygate Development Corp. (the 'proponent') is proposing to construct a residential development located at 215 & 229 Lexington Road (the 'property'). The property currently consists of one recently-constructed retirement home apartment building containing 216 dwellings and a long-term care facility intended to be replaced by the recently constructed facility. Two additional apartment buildings, containing 447 dwelling units (the 'proposed development'), are proposed on the eastern part of the Property (the 'Development Site') bringing the overall unit total of the property to 663 dwelling units. The recently-constructed retirement home apartment building and two full-movement accesses onto Lexington Road are proposed to be retained, while the existing long-term care facility is proposed to be demolished. A total of 551 parking spaces will be provided at full build-out.

The purpose of this Transportation Impact Study (TIS) is to analyze the impact that the proposed development may have on the surrounding transportation network. This report takes into consideration of background traffic growth and other proposed developments in the area.

This report is outlined with the following sections:

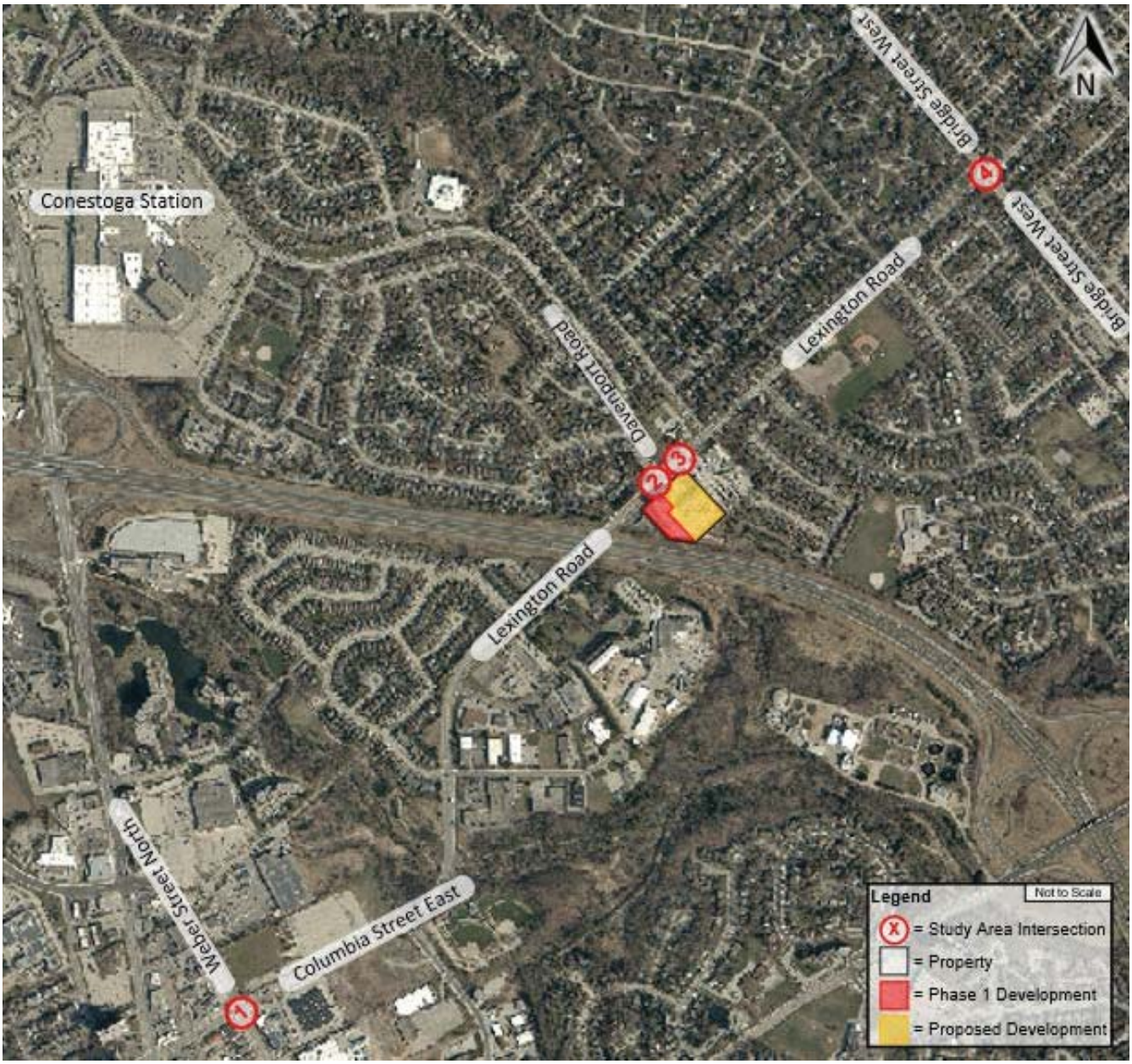
- **Section 1** through **Section 6** discuss the TIS;
- **Section 7** discusses the appropriateness of the proposed parking supply;
- **Section 8** discusses the conclusions made and the study recommendations based on the preceding sections.

This report adheres to the scope of investigation developed by IBI Group and circulated to City of Waterloo staff (the 'Review Agency') on January 5, 2022. This correspondence is presented in **Appendix A**.

1.1 Study Area

The property is located on the south side of Lexington Road, opposite Davenport Road, in the City of Waterloo. This is illustrated in **Exhibit 1-1**.

Exhibit 1-1: Study Area



Base Map Source: Region of Waterloo. Retrieved January 13, 2022 from https://maps.waterloo.ca/Html5Viewer/?viewer=waterlooviewer&viewer=waterlooviewer&_ga=2.134758836.454887642.1642086859-921520690.1639506881

The development site is located south of the Conestoga Mall – a large shopping centre with many retails and services. In addition, the Conestoga Station (a large transportation hub providing bus and rail transit services, as further described in **Section 2.2**) is located northwest of the development site. The areas to the north and east primarily consist of residential uses, while the area to the immediate west consist of retail and service uses.

The study area intersections consist of the following locations (as illustrated in **Exhibit 1-1**):

1. Columbia Street East and Weber Street North (Waterloo Regional Road 8) (signalized);
2. Lexington Road and Davenport Road / Existing West Site Access (signalized);
3. Lexington Road and Existing East Site Access (unsignalized); and
4. Lexington Road and Bridge Street West (signalized).

1.2 Analysis Periods

Based on the proposed development's land uses and size, the following analysis periods were used in this study:

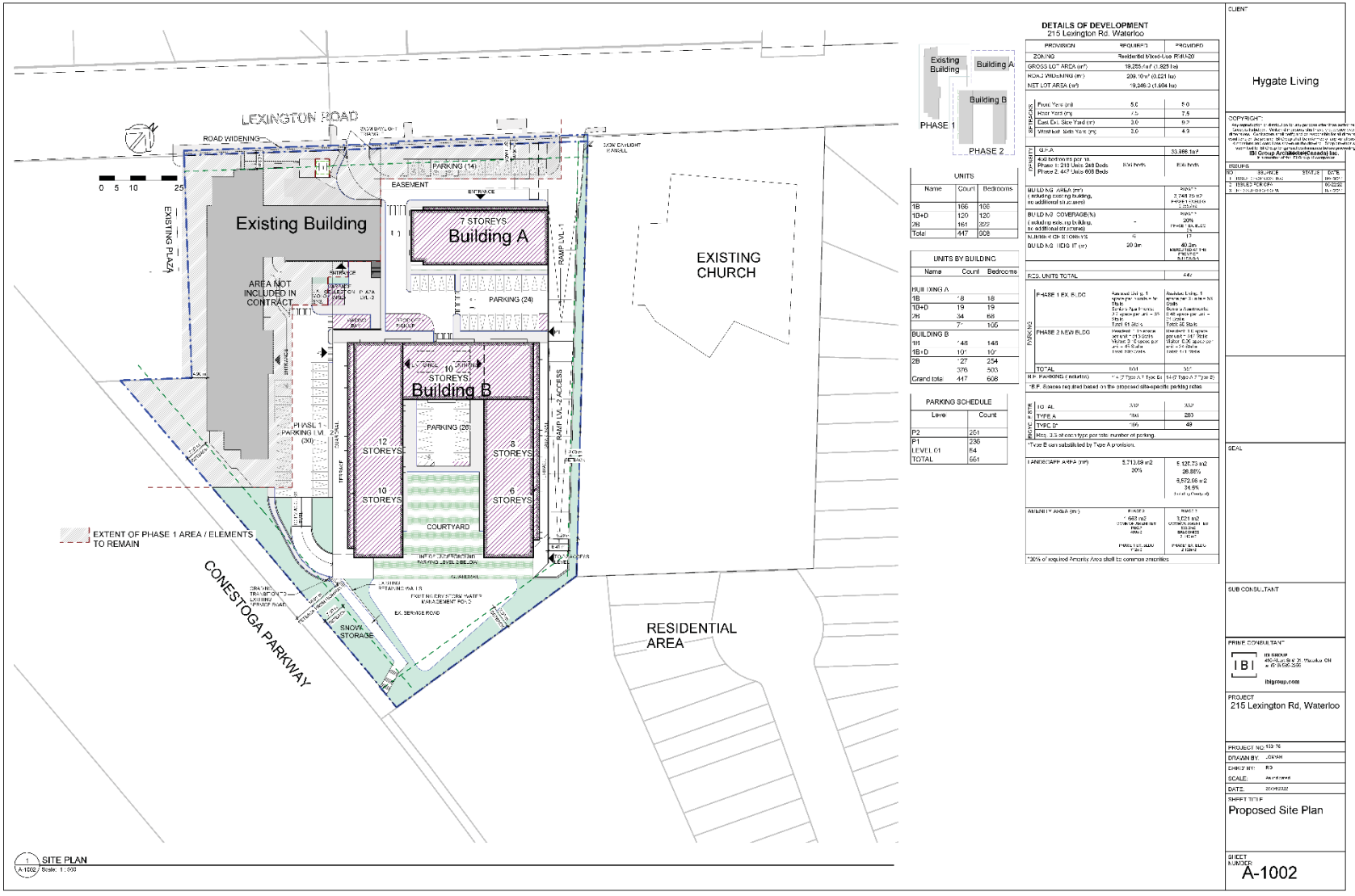
- Weekday AM Peak Period – 7:00 a.m. to 9:00 a.m. on a typical weekday; and
- Weekday PM Peak Period – 4:00 p.m. to 6:00 p.m. on a typical weekday.

1.3 Proposed Development

The proposed development (Phase 2) consists of two mid-rise apartment buildings collectively containing 447 dwelling units and 478 parking spaces. A total of 551 parking spaces are proposed for Phase 1 and Phase 2. The recently-completed retirement home apartment building (Phase 1, consisting of 216 dwelling units and 73 parking spaces) and two full-movement accesses to the property will be retained. The existing long-term care facility is proposed to be demolished. Full build-out of the proposed development is envisioned to consist of the recently completed Phase 1, followed by Phase 2.

The proposed site plan is illustrated in **Exhibit 1-2**.

Exhibit 1-2: Proposed Site Plan



2 2022 Existing Conditions

This section documents the transportation network in the study area in 2022, including existing roadways, traffic control measures, intersection performance, walking and cycling facilities, and transit operations.

2.1 Existing Road Network

Exhibit 2-1 summarizes the characteristics of the study area roadways.

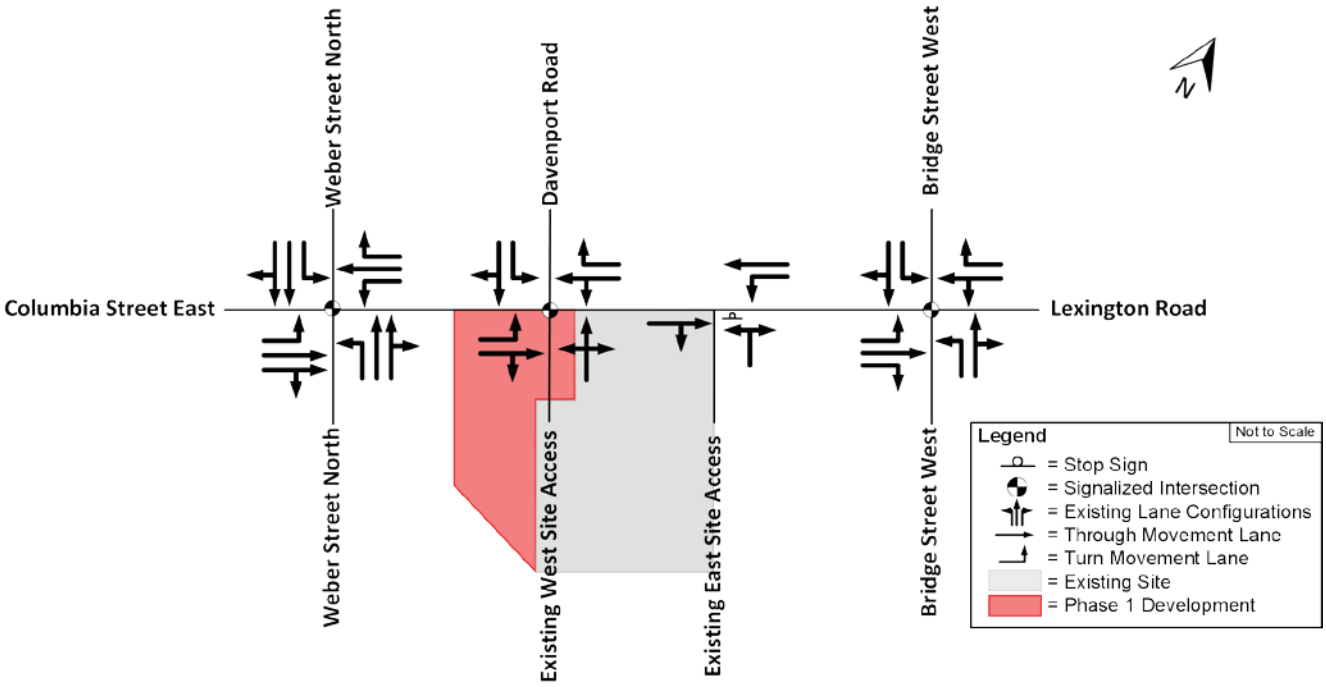
Exhibit 2-1: Study Area Existing Road Network

Street Name	Class. [1]	Orientation	Road Width (Lanes)	Traffic Direction	From	To	On-Street Parking	Speed Limit
Columbia Street East	City Arterial	East / West	4	Two-Way	King Street North	Marsland Drive	Prohibited	50 km/h
Lexington Road	Major Collector	East / West	2	Two-Way	Marsland Drive	University Avenue East	Prohibited	50 km/h
Weber Street North (Waterloo Regional Road 8)	Regional Arterial	North / South	4	Two-Way	North City Limit	Erb Street East	Prohibited	60 km/h
Davenport Road	Major Collector	North / South	2	Two-Way	Baffin Place	Lexington Road	Prohibited	50 km/h
Bridge Street West	Regional Arterial	North / South	2	Two-Way	King Street North	South City Limit	Prohibited	50 km/h

Lane configurations for the study area intersections are illustrated in **Exhibit 2-2**.

[1] Roadway classifications were obtained from **Schedule E – Road Classification System** of the City of Waterloo Official Plan (February 2018) (https://www.waterloo.ca/en/government/resources/Documents/Cityadministration/Official-plan/2020/OP-Schedule-E-Road-Classification-System.pdf).

Exhibit 2-2: Existing Lane Configuration



2.2 Existing Transit Network

The proposed development is located approximately 2 kilometres (an approximate 6-minute bus ride) southeast of the Conestoga Station, which provides connectivity to several local bus routes and ION LRT. In addition, there are several bus stops located in close proximity to the existing development.

Transit services in the development area are illustrated in **Exhibit 2-3** while service patterns and destinations of the routes in close proximity are illustrated in **Exhibit 2-4**.

Exhibit 2-3: Existing Transit Network



Base Map Source: Grand River Transit. Retrieved December 15, 2021 from https://www.grt.ca/en/schedules-maps/resources/GRT-transit-system-map-with-full-street-network.pdf

Exhibit 2-4: Existing Transit Service Patterns

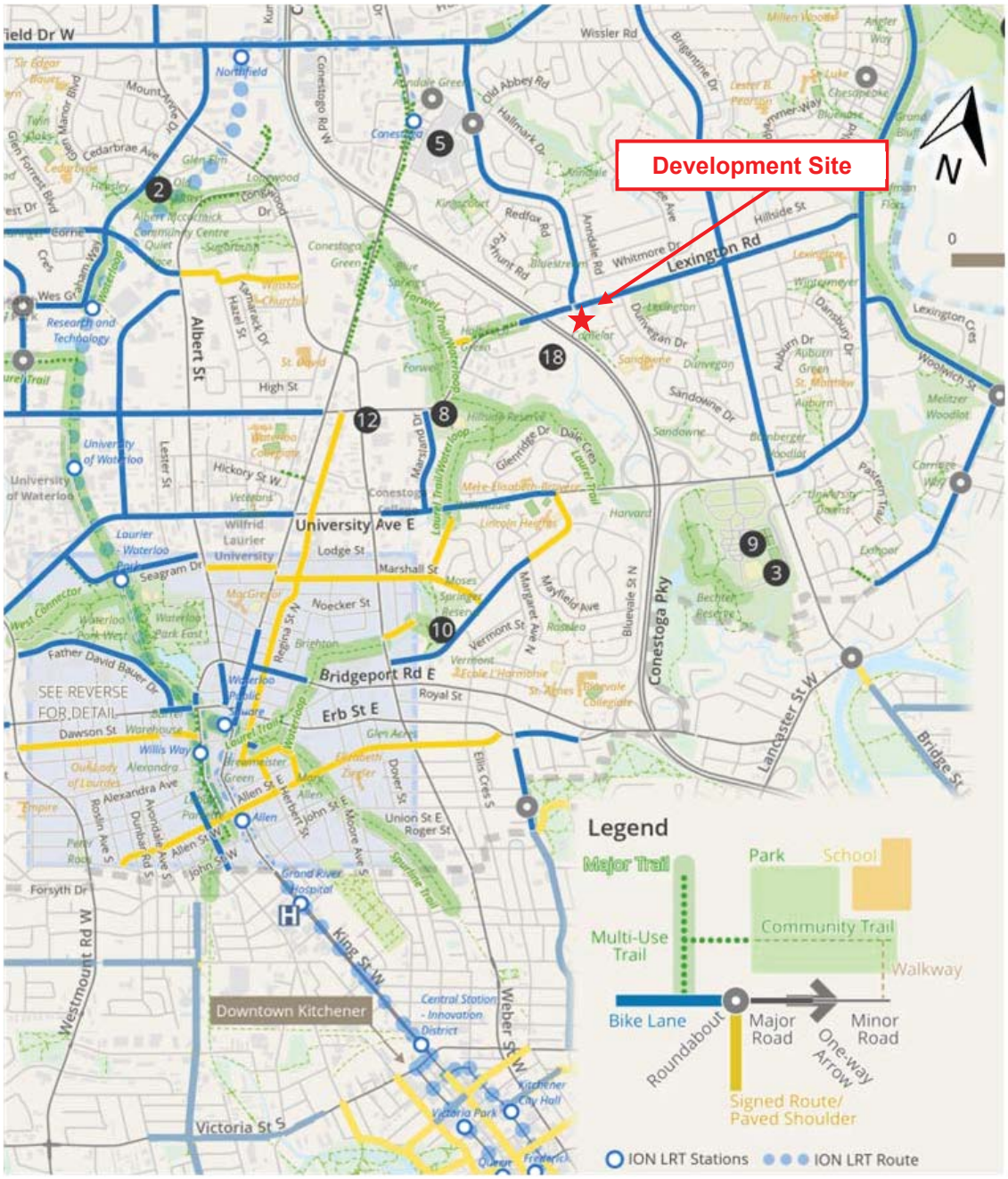
Service Provider	Route	Onward Transit Connections	Approximate Walking Distance to Nearest Bus Stop [2]	Average Peak Hour Bus Service Frequency
Grand River Transit	29 Keats-University	The Boardwalk, University of Waterloo, Conestoga Station	< 100 metres (< 1 minute)	30 minutes
	31Columbia	University of Waterloo, Conestoga Station	< 100 metres (< 1 minute)	30 minutes

2.3 Existing Active Transportation Network

The proposed development is well connected to the City of Waterloo cycling network, and is located in close proximity to multi-use Trail/bike lane along Lexington Road, Davenport Road, and Bridge Street West. These cycling routes are illustrated in **Exhibit 2-5**. In addition, concrete sidewalks are provided on all study area roadways.

[2] Approximate walking speed of 1 m/s.

Exhibit 2-5: Existing Bicycle Route Network



Base Map Source: City of Waterloo. Retrieved December 15, 2021 from https://www.waterloo.ca/en/living/resources/Images/2020-Waterloo-Cycling-Map.pdf

2.4 Turning Movement Counts

IBI Group commissioned the collection of new turning movement counts (TMCs) from Ontario Traffic Inc. at the study area intersections noted in **Section 1.1**. Details regarding the TMCs used in this study are summarized in **Exhibit 2-6**.

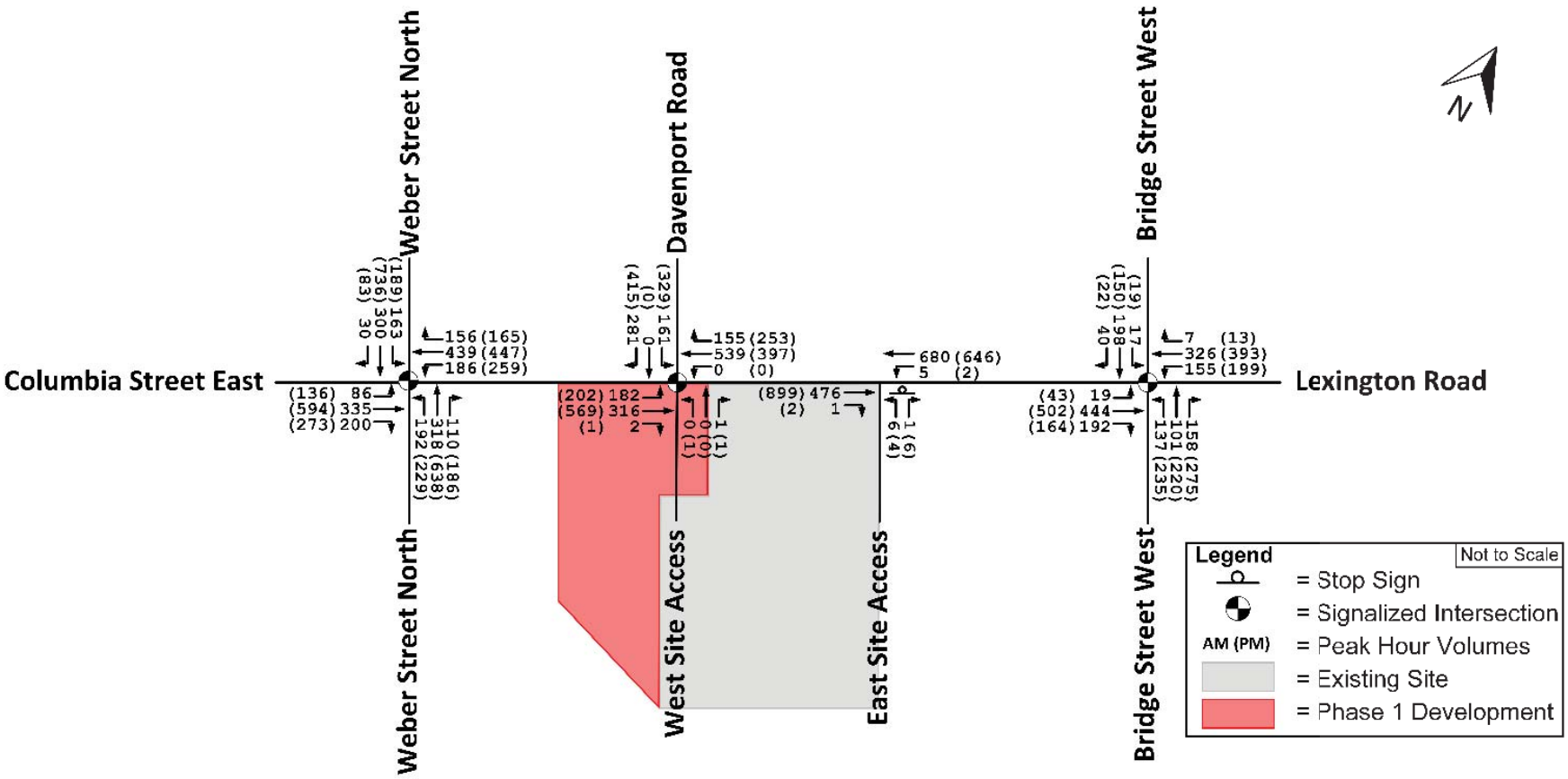
Exhibit 2-6: Traffic Data Information

Intersection	Data Source	Collection Date	Peak Hour	
			Weekday AM	Weekday PM
Columbia Street East and Weber Street North	Ontario Traffic Inc.	December 14, 2021	8:00 a.m. – 9:00 a.m.	4:00 p.m. – 5:00 p.m.
Lexington Road and Davenport Road / Existing West Site Access	Ontario Traffic Inc.	December 14, 2021	8:00 a.m. – 9:00 a.m.	5:00 p.m. – 6:00 p.m.
Lexington Road and Existing East Site Access	Ontario Traffic Inc.	December 14, 2021	8:00 a.m. – 9:00 a.m.	5:00 p.m. – 6:00 p.m.
Lexington Road and Bridge Street West	Ontario Traffic Inc.	December 14, 2021	7:45 a.m. – 8:45 a.m.	4:30 p.m. – 5:30 p.m.

In consideration of the ongoing Coronavirus disease (COVID-19) outbreak and its impacts on typical traffic patterns, COVID-19 TMC adjustment factors of 1.2 and 1.1 are applied to the collected TMCs during Weekday AM and PM Peak Horus, respectively. These factors were based on a comparison between 2019 and 2020 entire intersection counts at the intersection of Columbia Street and King Street, obtained from Spectrum Traffic Data Inc. Full turning movement counts data (observed counts and historical counts) and COVID-19 adjustment factor calculations are presented in **Appendix B**.

A summary of the 2022 Existing Conditions traffic volumes is presented in **Exhibit 2-7**.

Exhibit 2-7: 2022 Existing Conditions Traffic Volumes



2.5 Signal Timing Plans

Signal timing plans for the signalized study area intersections were acquired from the Region of Waterloo, and are presented in **Appendix C**.

2.6 2022 Existing Conditions Analysis

Using the turning movement counts described in **Section 2.4** and the signal timing plans described in **Section 2.5**, the study area intersections were analyzed using the Synchro 11 software package, which is based on the **Highway Capacity Manual** methodology.

Based on the Region of Waterloo document **Transportation Impact Study Guidelines** (July 2014), the criteria for identifying critical intersections and movements at signalized and unsignalized intersections under the jurisdiction of the City of Waterloo or the Region of Waterloo are as follows:

- The criteria for identifying “critical” intersections are:
  - Overall Level of Service E or F (i.e. average control delay per vehicle greater than 55 seconds) for signalized intersections; and
  - Overall Level of Service E or F (i.e. average control delay per vehicle greater than 35 seconds) for unsignalized intersections.
- The criteria for identifying “critical” movements are:
  - The average control delay for individual movements is greater that 55 seconds;
  - Estimated 95th percentile queue length for an exclusive movement exceeds the available storage space;
  - Estimated 95th percentile queue length for an individual movement will block an existing access; and
  - Exclusive turning lanes are inaccessible because of queue lengths in adjacent through lanes.

The following subsections detail existing traffic operations at the study area intersections for the Weekday AM and PM Peak Hours. Full Highway Capacity Manual analysis for the 2022 Existing Conditions scenario is presented in **Appendix D**.

2.6.1 Signalized Intersections

The results of the 2022 Existing Conditions traffic operations analysis for the study area signalized intersection during the Weekday AM and Weekday PM Peak hours are presented in **Exhibit 2-8**.

Exhibit 2-8: 2022 Existing Conditions Traffic Operations - Signalized Intersections

Intersection	Intersection			Individual Movement					
	LOS	Delay (s)	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Capacity (m)
Weekday AM Peak Hour									
Columbia Street East and Weber Street North	C	25.3	0.46	EBL	B	19.2	0.11	18	40
				EBTR	C	23.6	0.34	43	-
				WBL	B	19.4	0.23	34	100
				WBT	C	30.2	0.63	109	-
				WBR	C	22.2	0.09	12	-
				NBL	C	21.5	0.28	37	75
				NBTR	C	28.4	0.37	44	-
				SBL	C	21.6	0.24	32	65
				SBTR	C	27.8	0.30	36	-
Lexington Road and Davenport Road/Existing West Site Access	B	18.3	0.52	EBL	B	10.3	0.17	20	-
				EBTR	A	8.6	0.31	37	-
				WBLT	C	22.3	0.67	107	-
				WBR	B	12.7	0.09	9	-
				NBLTR	C	23.0	0.00	0	-
				SBL	C	26.9	0.32	38	70
				SBTR	C	24.9	0.17	2	-
Lexington Road and Bridge Street North	C	22.8	0.47	EBL	C	20.3	0.03	7	45
				EBT	C	26.4	0.58	101	-
				EBR	C	20.4	0.13	17	45
				WBL	C	24.9	0.26	41	20
				WBTR	C	29.3	0.51	85	-
				NBL	B	14.3	0.16	22	80
				NBTR	B	14.0	0.23	26	-
				SBL	B	18.3	0.02	6	40
				SBTR	C	22.5	0.35	47	-

Intersection	Intersection			Individual Movement					
	LOS	Delay (s)	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Capacity (m)
Weekday PM Peak Hour									
Columbia Street East and Weber Street North	C	32.9	0.62	EBL	C	25.2	0.21	29	40
				EBTR	D	37.7	0.73	104	-
				WBL	C	24.2	0.34	53	100
				WBT	D	36.5	0.68	117	-
				WBR	C	26.0	0.09	14	-
				NBL	C	24.2	0.32	45	75
				NBTR	D	35.5	0.69	103	-
				SBL	C	21.9	0.24	37	65
				SBTR	C	33.5	0.66	98	-
Lexington Road and Davenport Road/Existing West Site Access	B	19.3	0.62	EBL	B	11.6	0.22	25	-
				EBTR	B	15.7	0.63	87	-
				WBLT	C	25.5	0.64	81	-
				WBR	B	16.9	0.14	14	-
				NBLTR	B	16.9	0.00	-	-
				SBL	C	24.0	0.53	63	70
				SBTR	B	19.6	0.25	7	-
Lexington Road and Bridge Street North	C	27.8	0.64	EBL	C	25.6	0.07	13	45
				EBT	D	37.3	0.76	137	-
				EBR	C	24.4	0.15	21	45
				WBL	C	32.7	0.42	55	20
				WBTR	D	45.5	0.79	133	-
				NBL	B	11.8	0.24	32	80
				NBTR	B	14.2	0.47	63	-
				SBL	B	16.4	0.02	6	40
				SBTR	B	18.8	0.23	33	-

Note: Red font represents a lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 2-8,** no intersections were found to be operating above critical operational thresholds for overall operation during the Weekday AM and Weekday PM Peak hours.

With respect to individual movements, the following observations are noted during the Weekday AM Peak Hour:

- At the Columbia Street East and Weber Street North intersection:
  - The eastbound left-turn and westbound left-turn lane entrances may be inaccessible due to 95th percentile queues in adjacent through lanes.
- At the Lexington Road and Bridge Street North intersection:

  - The 95th percentile queue length for the westbound left-turn movement was found to exceed the available storage lane capacity by approximately four car lengths; and
  - The eastbound left-turn, eastbound right-turn, westbound left-turn, and southbound left-turn lane entrances may be inaccessible due to 95th percentile queues in adjacent through lanes.

Furthermore, the following observations are noted during the Weekday PM Peak Hour:

- At the Columbia Street East and Weber Street North intersection:
  - The eastbound left-turn, westbound left-turn, northbound left-turn, and southbound left-turn lane entrances may be inaccessible due to 95th percentile queues in adjacent through lanes.
- At the Lexington Road and Bridge Street North intersection:
  - The 95th percentile queue lengths for the westbound left-turn movement was found to exceed the available storage lane capacity by approximately six car lengths; and
  - The eastbound left-turn, eastbound right-turn, and westbound left-turn lane entrances may be inaccessible due to 95th percentile queues in adjacent through lanes.

2.6.2 Unsignalized Intersections

The results of the 2022 Existing Conditions traffic operations analysis for the study area unsignalized intersections are presented in **Exhibit 2-9**.

Exhibit 2-9: 2022 Existing Conditions Traffic Operations - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue (m)	Storage Capacity (m)
Weekday AM Peak Hour							
Lexington Road and Existing East Site Access	0.2	WBL	A	8.4	0.00	0	12
		NBLTR	C	22.3	0.03	1	-
Weekday PM Peak Hour							
Lexington Road and Existing East Site Access	0.2	WBL	B	10.6	0.00	0	12
		NBLTR	D	33.1	0.07	2	-

Note: Red font represents a lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 2-9**, no instances of delay or queues exceeding critical operational thresholds were observed at the study area unsignalized intersections during the Weekday AM and Weekday PM Peak hours under the 2022 Existing Conditions scenario.

3 Future Background Conditions

This section discusses the proposed development horizon year, background traffic growth rates, anticipated future transportation network improvements, other development-related traffic in the study area, and future traffic conditions without the proposed development under the 2027 horizon year.

3.1 Horizon Year

Based on the Region of Waterloo document **Transportation Impact Study Guidelines** (July 2014), a five-year horizon from the date of this study (i.e., 2027) was selected for the Future Background and Future Total analyses.

3.2 Background Developments

Based on a review of the available information, no background development was identified to be included in the future analyses. It was assumed that background traffic growth, discussed in **Section 3.3**, accounts for all sources of anticipated traffic growth within the study area.

3.3 Background Traffic Growth

An assumed annual traffic growth rate of 2% for intersections was applied to traffic volumes within the study area. Application of this growth rate results in absolute increases in traffic volumes of approximately 10.4% between 2022 and 2027.

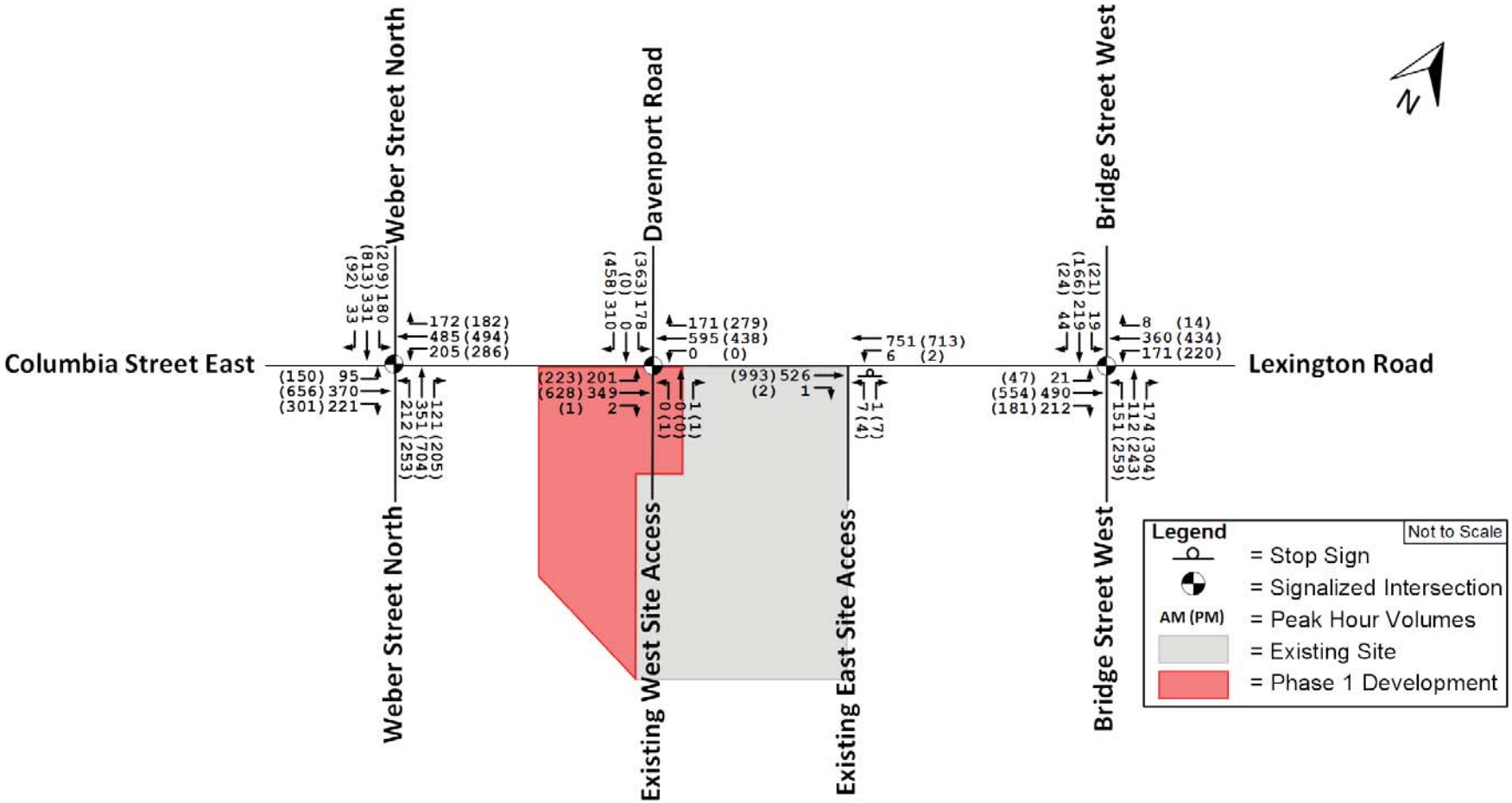
3.4 Future Transportation Network Improvements

No future transportation network improvement was identified to be included in the future analyses.

3.5 2027 Future Background Conditions Analysis

New trips resulting from the background traffic growth up to the horizon year of 2027 were added to the 2022 Existing Conditions scenario, producing the 2027 background traffic volumes illustrated in **Exhibit 3-1**.

Exhibit 3-1: 2027 Future Background Conditions Traffic Volumes



The results of the 2027 Future Background Conditions traffic analysis are summarized in the following subsections. Full Highway Capacity Manual analysis for the 2027 Future Background Conditions scenario is presented in **Appendix E**.

3.5.1 Signalized Intersections

The results of the 2027 Future Background Conditions traffic operations analysis for the study area signalized intersections during the Weekday AM and Weekday PM Peak hours are presented in **Exhibit 3-2**.

Exhibit 3-2: 2027 Future Background Conditions Traffic Operations - Signalized Intersection

Intersection	Intersection			Individual Movement					
	LOS	Delay (s)	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Capacity (m)
Weekday AM Peak Hour									
Columbia Street East and Weber Street North	C	26.2	0.51	EBL	B	19.8	0.13	19	40
				EBTR	C	24.1	0.39	49	-
				WBL	C	20.5	0.28	37	100
				WBT	C	32.9	0.70	133	-
				WBR	C	22.5	0.10	14	-
				NBL	C	21.9	0.31	40	75
				NBTR	C	29.1	0.41	49	-
				SBL	C	21.9	0.27	35	65
				SBTR	C	28.3	0.34	40	-
Lexington Road and Davenport Road/Existing West Site Access	B	19.5	0.58	EBL	B	11.2	0.19	22	-
				EBTR	A	8.9	0.34	41	-
				WBLT	C	25.3	0.75	124	-
				WBR	B	12.9	0.10	10	-
				NBLTR	C	23.0	0.00	-	-
				SBL	C	27.5	0.35	42	70
				SBTR	C	25.2	0.19	10	-
Lexington Road and Bridge Street North	C	23.7	0.52	EBL	C	20.7	0.03	7	45
				EBT	C	28.0	0.64	113	-
				EBR	C	20.7	0.16	20	45
				WBL	C	25.3	0.28	44	20
				WBTR	C	30.6	0.57	95	-
				NBL	B	14.5	0.17	24	80
				NBTR	B	14.3	0.27	30	-
				SBL	B	18.4	0.03	6	40
				SBTR	C	23.2	0.39	53	-

Intersection	Intersection			Individual Movement					
	LOS	Delay (s)	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Capacity (m)
Weekday PM Peak Hour									
Columbia Street East and Weber Street North	D	35.6	0.69	EBL	C	26.0	0.23	32	40
				EBTR	D	41.5	0.82	118	-
				WBL	C	26.4	0.37	59	100
				WBT	D	39.9	0.76	133	-
				WBR	C	26.2	0.10	15	-
				NBL	C	26.2	0.36	50	75
				NBTR	D	38.7	0.77	117	-
				SBL	C	22.7	0.27	41	65
				SBTR	D	35.7	0.74	111	-
Lexington Road and Davenport Road/Existing West Site Access	C	20.6	0.69	EBL	B	12.2	0.24	28	-
				EBTR	B	17.4	0.69	102	-
				WBLT	C	28.6	0.72	101	-
				WBR	B	17.3	0.16	15	-
				NBLTR	B	16.9	0.00	-	-
				SBL	C	25.2	0.58	71	70
				SBTR	B	19.9	0.28	15	-
Lexington Road and Bridge Street North	C	30.7	0.71	EBL	C	26.3	0.08	14	45
				EBT	D	42.7	0.84	160	-
				EBR	C	24.8	0.18	24	45
				WBL	C	33.6	0.46	61	20
				WBTR	D	52.8	0.87	152	-
				NBL	B	12.0	0.26	35	80
				NBTR	B	15.1	0.53	73	-
				SBL	B	16.6	0.03	7	40
				SBTR	B	19.3	0.26	36	-

Note: Red font represents a lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 3-2**, no intersections were found to be operating above critical operational thresholds for overall operation during the Weekday AM and Weekday PM Peak hours.

With respect to individual movements, the following observations are noted during the Weekday AM Peak Hour:

- At the Columbia Street East and Weber Street North intersection:
  - The eastbound left-turn and westbound left-turn lane entrances may be inaccessible due to 95th percentile queues in adjacent through lanes.
- At the Lexington Road and Bridge Street North intersection:

  - The 95th percentile queue lengths for the westbound left-turn movement are expected to exceed the available storage lane capacity by approximately four car lengths; and
  - The eastbound left-turn, eastbound right-turn, westbound left-turn and southbound left-turn lane entrances may be inaccessible due to 95th percentile queues in adjacent through lanes.

Furthermore, the following observations are noted during the Weekday PM Peak Hour:

- At the Columbia Street East and Weber Street North intersection:
  - The eastbound left-turn, westbound left-turn, northbound left-turn, and southbound left-turn lane entrances may be inaccessible due to 95th percentile queues in adjacent through lanes.
- At the Lexington Road and Davenport Road/Existing West Site Access intersection:
  - The 95th percentile queue lengths for the southbound left-turn movement are expected to exceed the available storage lane capacity by less than one car length.
- At the Lexington Road and Bridge Street North intersection:
  - The 95th percentile queue lengths for the westbound left-turn movement are expected to exceed the available storage lane capacity by approximately seven car lengths; and
  - The eastbound left-turn, eastbound right-turn, and westbound left-turn lane entrances may be inaccessible due to 95th percentile queues in adjacent through lanes.

3.5.2 Unsignalized Intersections

The results of the 2027 Future Background Conditions traffic operations analysis for the study area unsignalized intersections are presented in **Exhibit 3-3**.

Exhibit 3-3: 2027 Future Background Conditions Traffic Operations - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue (m)	Storage Capacity (m)
Weekday AM Peak Hour							
Lexington Road and Existing East Site Access	0.2	WBL	A	8.6	0.01	0	12
		NBLTR	D	27.0	0.05	1	-
Weekday PM Peak Hour							
Lexington Road and Existing East Site Access	0.3	WBL	B	11.6	0.00	0	12
		NBLTR	E	48.7	0.12	2	-

Note: Red font represents a lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 3-3**, no instances of delay or queues exceeding critical operational thresholds are expected at the study area unsignalized intersections during the Weekday AM and Weekday PM Peak hours under the 2027 Future Background Conditions scenario.

4 Future Total Conditions

This section of the report analyzes the impact of the proposed development on the future total traffic conditions for 2027.

4.1 Proposed Site Access

As discussed in **Section 1.3**, two full-movement accesses to the proposed development will be via the West and East Site Access. The existing lane configurations at the Lexington Road and Existing Site Accesses, as illustrated in **Exhibit 2-2**, are proposed to remain unaltered.

4.2 Trip Generation

The gross trips expected to be generated by the proposed development are examined in this section. The net trips are then assigned and distributed to the study area road network. It should be noted that the trip generation was based on an earlier development concept for Phase 2 which contained 453 dwelling units. As 447 are now proposed, the net new vehicle trips and resulting traffic impacts are expected to be lower than described in this report.

4.2.1 Gross Trip Generation

Trip generation rates from the publication **Trip Generation Manual – 10th Edition** (Institute of Transportation Engineers, September 2017) manual were used to estimate future vehicular trips associated with the proposed development. Due to the changes to the development site, all trips entering/exiting the development site under future background conditions were removed from the transportation network. Future trips generated by the development were then estimated, based on the recently constructed retirement home apartment containing 216 dwelling units and the proposed two additional apartment buildings containing 453 dwelling units. Based on the nature of the development, its location context, and the data quality, average rate data and fitted curve data (where applicable) for the Land Use Code 252: Senior Adult Housing - General Urban/Suburban and Land Use Code 221: Multifamily Housing (Mid-Rise) – General Urban / Suburban is used to calculate the estimated vehicle trips during the Weekday AM and PM Peak hours. The estimated net new inbound and outbound vehicle trips for the proposed development are presented in **Exhibit 4-1**.

Exhibit 4-1: Proposed Development Trip Generation

215 & 229 Lexington Road, Waterloo							
LUC 252: Senior Adult Housing- General Urban/Suburban – 216 Units							
Term	**Unit**	**Weekday AM Peak Hour**			**Weekday PM Peak Hour**		
		Inbound	**Outbound**	**Total**	**Inbound**	**Outbound**	**Total**
Trip Generation Equation	vehicle trips / unit	T = 0.20 (X) - 0.18			T = 0.24 (X) + 2.26		
Directional Distribution	-	35%	65%	100%	55%	45%	100%
Trip Generation Rate	vehicle trips / unit	0.07	0.13	0.20	0.14	0.11	0.25
Total Trips	vehicle trips / hour	15	28	43	30	24	54
LUC 221: Multifamily Housing (Mid-Rise) – General Urban / Suburban – 453 Units							
Term	**Unit**	**Weekday AM Peak Hour**			**Weekday PM Peak Hour**		
		Inbound	**Outbound**	**Total**	**Inbound**	**Outbound**	**Total**
Trip Generation Equation	vehicle trips / unit	Ln(T) = 0.98 Ln(X) - 0.98			Ln(T) = 0.96 Ln(X) - 0.63		
Directional Distribution	-	26%	74%	100%	61%	39%	100%
Trip Generation Rate	vehicle trips / unit	0.09	0.24	0.33	0.26	0.16	0.42
Total Trips	vehicle trips / hour	39	111	150	115	74	189
Overall Development Trip Generation							
Term	**Unit**	**Weekday AM Peak Hour**			**Weekday PM Peak Hour**		
		Inbound	**Outbound**	**Total**	**Inbound**	**Outbound**	**Total**
Total Trips	vehicle trips / hour	54	139	193	145	98	243

Based on the estimates presented in **Exhibit 4-1**, the proposed development is expected to generate 193 vehicle trips during the Weekday AM Peak hour (54 inbound trips and 139 outbound trips). During the Weekday PM Peak hour, the proposed development is anticipated to generate 243 vehicle trips 145 inbound trips inbound and 98 outbound trips). Trip generation source data is presented in **Appendix F**.

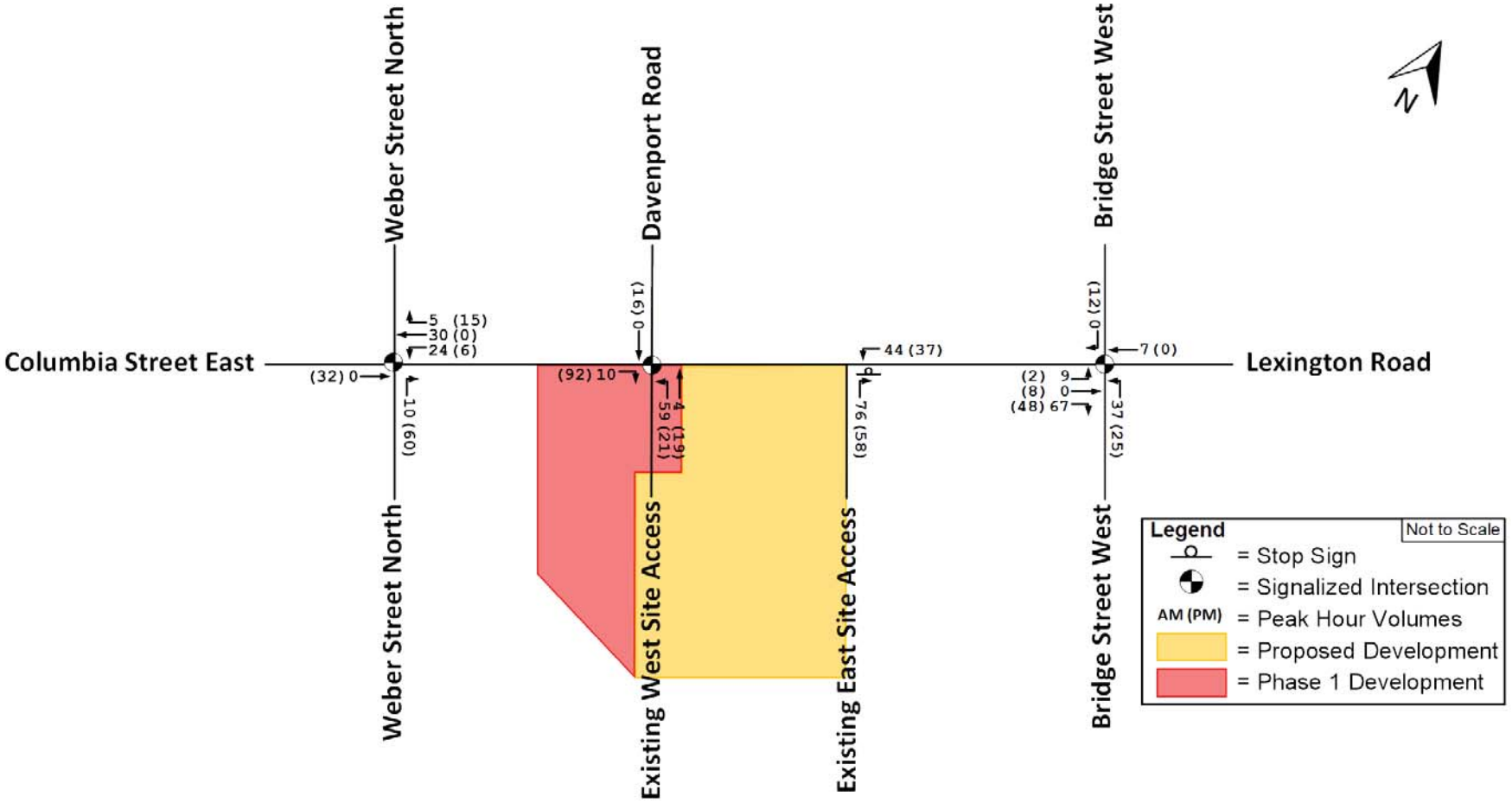
4.2.2 Trip Distribution and Assignment

The estimated trips for the proposed developments were subsequently distributed across the study area using travel data from 2016 Transportation Tomorrow Survey (TTS). The estimated trip distribution is outlined in **Exhibit 4-2**. Site traffic was assigned to the road network based on the trip patterns in the study area, location and configuration of the site access, future lane configuration, and the route providing the shortest travel time.

Exhibit 4-2: Trip Distribution

To / From	Inbound Trips		Outbound Trips	
	Weekday AM Peak Hour	Weekday PM Peak Hour	Weekday AM Peak Hour	Weekday PM Peak Hour
Lexington Road (East)	14%	0%	0%	8%
Columbia Street East (West)	0%	22%	22%	0%
Davenport Road (North)	0%	11%	3%	19%
Weber Street North (North)	0%	0%	17%	6%
Weber Street North (South)	19%	42%	4%	16%
Bridge Street West (North)	0%	8%	6%	2%
Bridge Street West (South)	67%	17%	48%	49%
Total	**100%**	**100%**	**100%**	**100%**

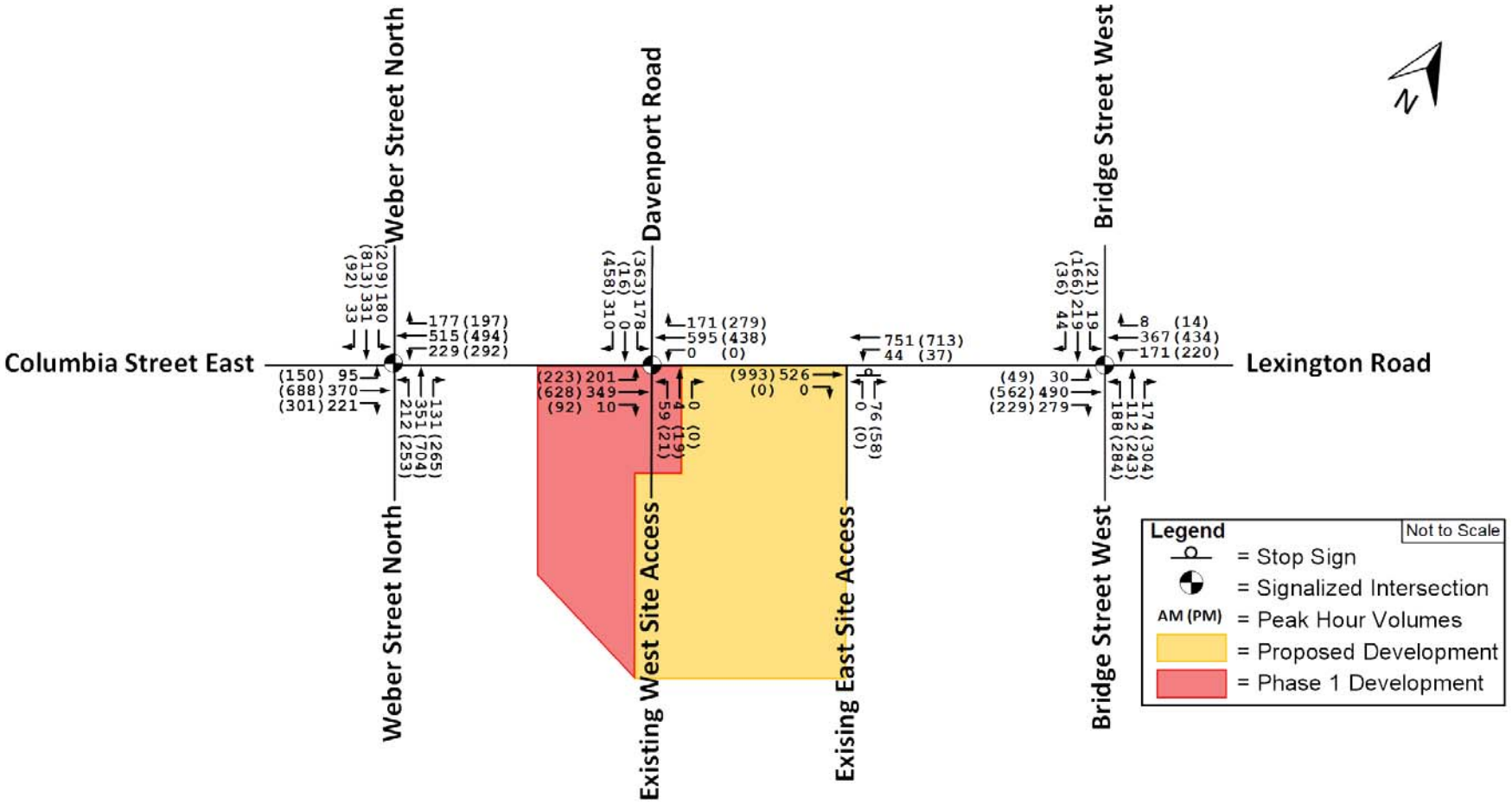
Exhibit 4-3: New Site Traffic Volumes



4.3 2027 Future Total Conditions Analysis

New trips resulting from the proposed development were added to the 2027 Future Background Conditions scenario, producing the 2027 Future Total Conditions traffic volumes illustrated in **Exhibit 4-4**. As discussed in **Section 4.2**, all trips entering/exiting the development site under future background conditions were removed, and the net new site trips were determined based on the 669-unit combined Phase 1 and 2 development.

Exhibit 4-4: 2027 Future Total Conditions Traffic Volumes



Using the volumes illustrated in **Exhibit 4-4**, traffic operations analysis was conducted to determine future intersection performance with the impact of the Phase 1 development and the proposed development. The results of the traffic operations analysis are presented in the following subsections. Full Highway Capacity Manual analysis for the 2027 Future Total Conditions scenario are presented in **Appendix G**.

4.3.1 Signalized Intersections

The results of the 2027 Future Total Conditions traffic operations for the study area signalized intersections are presented in **Exhibit 4-5**.

Exhibit 4-5: 2027 Future Total Conditions Traffic Operations – Signalized Intersections

Intersection	Intersection			Individual Movement					
	LOS	Delay (s)	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Capacity (m)
Weekday AM Peak Hour									
Columbia Street East and Weber Street North	C	26.7	0.54	EBL	C	20.2	0.13	19	40
				EBTR	C	24.1	0.39	49	-
				WBL	C	21.4	0.31	42	100
				WBT	C	34.7	0.74	147	-
				WBR	C	22.6	0.10	14	-
				NBL	C	21.9	0.31	40	75
				NBTR	C	29.2	0.42	49	-
				SBL	C	22.0	0.27	35	65
				SBTR	C	28.3	0.34	40	-
Lexington Road and Davenport Road/Existing West Site Access	B	19.7	0.58	EBL	B	11.2	0.19	22	-
				EBTR	A	9.0	0.35	42	-
				WBLT	C	25.3	0.75	124	-
				WBR	B	12.9	0.10	10	-
				NBLTR	C	24.6	0.14	18	-
				SBL	C	27.5	0.35	42	70
				SBTR	C	25.2	0.19	10	-
Lexington Road and Bridge Street North	C	24.3	0.52	EBL	C	21.4	0.04	9	45
				EBT	C	28.9	0.65	113	-
				EBR	C	21.9	0.21	25	45
				WBL	C	26.9	0.30	44	20
				WBTR	C	33.4	0.62	97	-
				NBL	B	14.4	0.21	29	80
				NBTR	B	13.9	0.26	30	-
				SBL	B	18.0	0.03	6	40
				SBTR	C	22.6	0.38	53	-

Intersection	Intersection			Individual Movement					
	LOS	Delay (s)	v/c Ratio	Movement	LOS	Delay (s)	v/c Ratio	95th Percentile Queue (m)	Storage Capacity (m)
Weekday PM Peak Hour									
Columbia Street East and Weber Street North	D	36.6	0.71	EBL	C	26.0	0.23	32	40
				EBTR	D	43.4	0.85	124	-
				WBL	C	27.3	0.38	61	100
				WBT	D	39.9	0.76	133	-
				WBR	C	26.3	0.11	15	-
				NBL	C	26.2	0.36	50	75
				NBTR	D	40.7	0.82	132	-
				SBL	C	23.3	0.27	41	65
				SBTR	D	35.7	0.74	111	-
Lexington Road and Davenport Road/Existing West Site Access	C	21.6	0.75	EBL	B	12.2	0.24	28	-
				EBTR	C	21.1	0.79	127	-
				WBLT	C	28.6	0.72	101	-
				WBR	B	17.3	0.16	15	-
				NBLTR	B	17.6	0.07	10	-
				SBL	C	25.2	0.58	71	70
				SBTR	C	20.3	0.31	20	-
Lexington Road and Bridge Street North	C	33.7	0.71	EBL	C	26.6	0.09	15	45
				EBT	D	46.6	0.88	163	-
				EBR	C	26.1	0.23	30	45
				WBL	D	36.1	0.50	61	20
				WBTR	E	65.5	0.94	152	-
				NBL	B	11.9	0.28	39	80
				NBTR	B	14.6	0.52	73	-
				SBL	B	16.2	0.03	7	40
				SBTR	B	19.0	0.27	38	-

Note: Red font represents a lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 4-5**, no intersections were found to be operating above critical operational thresholds for overall operation during the Weekday AM and Weekday PM Peak hours.

With respect to individual movements, the following observations are noted during the Weekday AM Peak Hour:

- At the Columbia Street East and Weber Street North intersection:
  - The eastbound left-turn and westbound left-turn lane entrances may be inaccessible due to 95th percentile queues in adjacent through lanes.
- At the Lexington Road and Bridge Street North intersection:

  - The 95th percentile queue lengths for the westbound left-turn movement was found to exceed the available storage lane capacity by approximately four car lengths; and
  - The eastbound left-turn, eastbound right-turn, westbound left-turn and southbound left-turn lane entrances may be inaccessible due to 95th percentile queues in adjacent through lanes.

Furthermore, the following observations are noted during the Weekday PM Peak Hour:

- At the Columbia Street East and Weber Street North intersection:
  - The eastbound left-turn, westbound left-turn, northbound left-turn, and southbound left-turn lane entrances may be inaccessible due to 95th percentile queues in adjacent through lanes.
- At the Lexington Road and Davenport Road/Existing West Site Access intersection:
  - The 95th percentile queue lengths for the southbound left-turn movement was found to exceed the available storage lane capacity by less than one car length.
- At the Lexington Road and Bridge Street North intersection:
  - The shared westbound through/right-turn movement is expected to operate above critical threshold (average control delay per vehicle of 65.5 seconds);
  - The 95th percentile queue lengths for the westbound left-turn movement was found to exceed the available storage lane capacity by approximately seven car lengths; and
  - The eastbound left-turn, eastbound right-turn, and westbound left-turn lane entrances may be inaccessible due to 95th percentile queues in adjacent through lanes.

4.3.2 Unsignalized Intersections

The results of the 2027 Future Total Conditions traffic operations analysis for the study area unsignalized intersections are presented in **Exhibit 4-6**.

Exhibit 4-6: 2027 Future Total Conditions Traffic Operations - Unsignalized Intersections

Intersection	Intersection Delay (s)	Lane	Lane LOS	Lane Delay (s)	Lane v/c Ratio	Lane 95th Percentile Queue (m)	Storage Capacity (m)
Weekday AM Peak Hour							
Lexington Road and Existing East Site Access	0.9	WBL	A	8.7	0.04	1	12
		NBLTR	B	12.1	0.13	3	-
Weekday PM Peak Hour							
Lexington Road and Existing East Site Access	0.9	WBL	B	12.2	0.07	2	12
		NBLTR	C	20.6	0.20	6	-

Note: Red font represents a lane/movement which exceeds critical operational thresholds.

As shown in **Exhibit 4-6**, no instances of delay or queues exceeding critical operational thresholds are expected at the study area unsignalized intersections during the Weekday AM and Weekday PM Peak hours under the 2027 Future Total Conditions scenario.

4.4 Existing Access Impacts

As required by the Region of Waterloo **Transportation Impact Study Guidelines** (July 2014), a movement is considered critical if a 95th percentile queue blocks an existing access. These instances are noted in **Exhibit 4-7**.

Exhibit 4-7: Existing Access Impacts

Intersection	Movement	2022 Existing		2027 Future Background		2027 Future Total	
		95th Percentile Queue (m)	Furthest Access Blocked	95th Percentile Queue (m)	Furthest Access Blocked	95th Percentile Queue (m)	Furthest Access Blocked
Weekday AM Peak Hour							
Columbia Street East and Weber Street North	NBTR	44	-	49	-	49	-
	EBTR	43	-	49	-	49	-
	SBTR	36	373 Weber Street North	40	373 Weber Street North	40	373 Weber Street North
	WBR	12	-	14	-	14	-
Lexington Road and Davenport Road/Existing West Site Access	EBTR	37	-	41	-	42	-
	SBTR	2	-	10	-	10	-
	WBR	9	-	10	-	10	-
Lexington Road and Bridge Street North	NBTR	26	-	30	-	30	-
	EBR	17	-	20	-	25	-
	SBTR	47	-	53	-	53	-
	WBTR	85	-	95	-	97	-
Weekday PM Peak Hour							
Columbia Street East and Weber Street North	NBTR	103	45 Columbia Street East	117	45 Columbia Street East	132	45 Columbia Street East
	EBTR	104	Regina Street North	118	Regina Street North	124	Regina Street North
	SBTR	98	385 Weber Street North	111	385 Weber Street North	111	385 Weber Street North
	WBR	14	-	15	-	15	-
Lexington Road and Davenport Road/Existing West Site Access	EBTR	87	-	102	-	127	-
	SBTR	7	-	15	-	20	-
	WBR	14	-	15	-	15	-
Lexington Road and Bridge Street North	NBTR	63	-	73	-	73	-
	EBR	21	-	24	-	30	-
	SBTR	33	-	36	-	38	-
	WBTR	133	-	152	-	152	-

Based on the analysis presented in **Exhibit 4-7**, the noted accesses are consistently impacted across the existing, future background, and future total conditions scenarios. As the traffic generated by the proposed development is expected to have minimal impact on overall traffic operations, increases to 95th percentile queue lengths for individual movement are minor. As such, no

additional existing access is expected to be impacted after development site traffic is added to the transportation network.

5 Traffic Operations Mitigation Measures

As noted in **Section 2.6**, **Section 3.5**, and **Section 4.3**, several movement-specific traffic operations are observed and/or expected to exceed critical operational thresholds under existing and future conditions. The following subsections discuss these constraints in greater detail, as well as potential measures to mitigate these constraints, as appropriate. Full Highway Capacity Manual analysis results for the Future Mitigated Conditions analysis are presented in **Appendix H**.

5.1 Lexington Road and Bridge Street North

Under the 2027 Future Total Conditions scenario, the shared westbound through/right-turn movement at this intersection is anticipated to operate above critical threshold (average control delay per vehicle of 65.5 seconds) during the Weekday PM Peak hour.

To improve traffic operations for the constrained movements noted above, adjustments to the existing signal timing plan for the Lexington Road and Bridge Street North intersection during the Weekday PM Peak hours were made. These adjustments are summarized in **Exhibit 5-1**.

Exhibit 5-1: Summary of Signal Timing Plan Adjustments for Traffic Operations Mitigation

Signal Phase	Lexington Road and Bridge Street North
	Weekday PM Peak Hour
NBLTR	63.0 to 57.0 (-6.0)
EBLTR	37.0 to 43.0 (+6.0)
NBL	15.0 to 9.0 (-6.0)
SBLTR	48.0 to 48.0 (+0.0)
EBL	10.0 to 9.0 (-1.0)
WBLTR	27.0 to 34.0 (+7.0)
Cycle Length	**No change**

A comparison of Unmitigated and Mitigated 2027 Future Total Conditions traffic operations at the Lexington Road and Bridge Street North intersection during the Weekday PM Peak hours resulting from these signal timing plan adjustments is presented in **Exhibit 5-2**.

Exhibit 5-2: 2027 Future Total Conditions Traffic Operations, Unmitigated and Mitigated, Signal Timing Plan Adjustments

Intersection	Movement	Unmitigated Conditions Delay (s)	Mitigated Conditions Delay (s)
Weekday PM Peak Hour			
Lexington Road and Bridge Street North	EBL	26.6	22.5
	EBT	46.6	32.3
	EBR	26.1	21.5
	WBL	36.1	28.6
	WBTR	65.5	38.3
	NBL	11.9	17.1
	NBTR	14.6	19.3
	SBL	16.2	16.4
	SBTR	19.0	19.2

Note: Red font represents a lane/movement which exceeds critical operational thresholds.

6 Traffic Analysis Summary

Based on the analysis presented in the transportation impact study, the proposed development is expected to generate up to 193 and 243 net new automobile trips during the Weekday AM and Weekday PM Peak hours, respectively.

Overall, the results of the traffic operations analysis indicate that no instances of vehicle delay exceeding critical thresholds are anticipated under mitigated conditions; and that turn lane storage, accessibility, and access blockage instances are largely comparable between scenarios. This indicates that the proposed development is expected to have a minimal impact on traffic operations within the study area.

To demonstrate the potential impacts of development site traffic to traffic operations within the study area, a comparison of signalized intersection operations under the 2027 Future Background Conditions and Future Total Conditions scenarios is presented in **Exhibit 6-1**.

Exhibit 6-1: 2027 Future Background (Mitigated) Conditions and Future Total (Mitigated) Conditions Traffic Operations Comparison

Intersection	Intersection delay (s)			Movement	Movement delay (s)		
	FB	FT	Difference		FB	FT	Difference
Weekday AM Peak Hour							
Columbia Street East and Weber Street North	26.2	26.7	+0.5	EBL	19.8	20.2	+0.4
				EBTR	24.1	24.1	+0.0
				WBL	20.5	21.4	+0.9
				WBT	32.9	34.7	+1.8
				WBR	22.5	22.6	+0.1
				NBL	21.9	21.9	+0.0
				NBTR	29.1	29.2	+0.1
				SBL	21.9	22.0	+0.1
				SBTR	28.3	28.3	+0.0
Lexington Road and Davenport Road/Existing West Site Access	19.5	19.7	+0.2	EBL	11.2	11.2	+0.0
				EBTR	8.9	9.0	+0.1
				WBLT	25.3	25.3	+0.0
				WBR	12.9	12.9	+0.0
				NBLTR	23.0	24.6	+1.6
				SBL	27.5	27.5	+0.0
				SBTR	25.2	25.2	+0.0
Lexington Road and Bridge Street North	23.7	24.3	+0.6	EBL	20.7	21.4	+0.7
				EBT	28.0	28.9	+0.9
				EBR	20.7	21.9	+1.2
				WBL	25.3	26.9	+1.6
				WBTR	30.6	33.4	+2.8
				NBL	14.5	14.4	-0.1
				NBTR	14.3	13.9	-0.4
				SBL	18.4	18.0	-0.4
				SBTR	23.2	22.6	-0.6

Intersection	Intersection delay (s)			Movement	Movement delay (s)		
	FB	FT	Difference		FB	FT	Difference
Weekday PM Peak Hour							
Columbia Street East and Weber Street North	35.6	36.5	+0.9	EBL	26.0	26.0	+0.0
				EBTR	41.5	43.4	+1.9
				WBL	26.4	27.3	+0.9
				WBT	39.9	39.9	+0.0
				WBR	26.2	26.3	+0.1
				NBL	26.2	26.2	+0.0
				NBTR	38.7	40.7	+2.0
				SBL	22.7	23.3	+0.6
				SBTR	35.7	35.7	+0.0
Lexington Road and Davenport Road/Existing West Site Access	20.6	21.5	+0.9	EBL	12.2	12.2	+0.0
				EBTR	17.4	21.1	+3.7
				WBLT	28.6	28.6	+0.0
				WBR	17.3	17.3	+0.0
				NBLTR	16.9	17.6	+0.7
				SBL	25.2	25.2	+0.0
				SBTR	19.9	20.3	+0.4
Lexington Road and Bridge Street North	25.4	26.3	+0.9	EBL	21.9	22.5	+0.6
				EBT	30.6	32.3	+1.7
				EBR	20.5	21.5	+1.0
				WBL	26.9	28.6	+1.7
				WBTR	35.1	38.3	+3.2
				NBL	17.0	17.1	+0.1
				NBTR	20.0	19.3	-0.7
				SBL	16.9	16.4	-0.5
				SBTR	19.6	19.2	-0.4

Note: Red font represents a lane/movement which exceeds critical operational thresholds.

Based on the comparison of 2027 Future Background and 2027 Future Total Mitigated Conditions, as presented in **Exhibit 6-1**, the maximum delay expected to be experienced by any movement is 3.7 seconds per vehicle. As this increase is likely to be imperceptible to the average road user, and as no new critical movements are created after the addition of development site traffic to the transportation network, this underscores the conclusions that the proposed development will have a minimal impact on traffic operations within the study area.

6.1 Impacts to Dearborn Boulevard / Dearborn Place and to Marsland Drive

In response to review agency comments received after the study was completed, impacts to the intersections of Lexington Road & Dearborn

Boulevard / Dearborn Place and to the intersection of Columbia Street East / Lexington Road & Marsland Drive are discussed in this subsection.

6.1.1 Lexington Road & Dearborn Boulevard / Dearborn Place

The intersection of Lexington Road & Dearborn Boulevard / Dearborn Place is located approximately 850 metres west of the development site, and serves as the access to the arterial road network for an employment area along the south side of Lexington Road and a residential area on the north side of Lexington Avenue. Due to the lack of trip generators, few trips from the proposed development to the residential area are expected. And, due to the proximity to the proposed development site (approximately 10 minutes walk), a significant portion of any trips destined for the employment area are expected to be non-auto trips. Based on this, the vast majority of vehicle trips passing through the Lexington Road & Dearborn Boulevard / Dearborn Place intersection are expected to be eastbound through and westbound through trips. As such, no additional northbound and southbound capacity is expected to be required above what is required to maintain present day operations.

With respect to eastbound through and westbound through volumes, overall volume increases are expected to be as illustrated in **Exhibit 6-2**.

Exhibit 6-2: Traffic Volume Increases along Columbia Street / Lexington Road Corridor

Movement	Future Background Volume	Future Total Volume	% Increase
Weekday AM Peak Hour			
EBT	671	681	1.4%
WBT	862	920	6.7%
Weekday PM Peak Hour			
EBT	1070	1159	8.3%
WBT	962	983	2.2%

As shown in **Exhibit 6-2**, traffic volume increases through the intersection of Lexington Road and Dearborn Boulevard / Dearborn Place are expected to be less than 10% in all cases, with the average increase being less than 5%. This small increase, when viewed in the context of minimal impacts to traffic operations at other intersections, suggests that the impacts to traffic operations at the intersection of Lexington Road and Dearborn Boulevard / Dearborn Place will be similarly minimal.

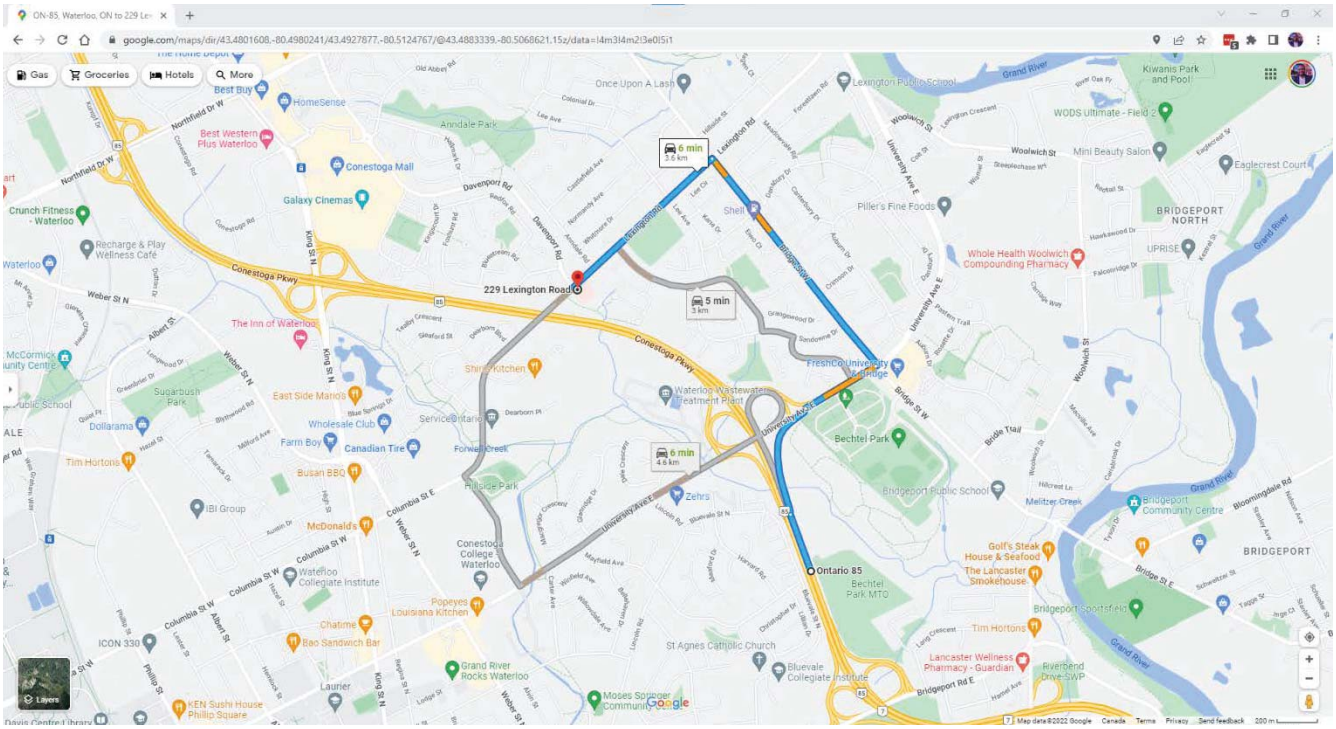
6.1.2 Columbia Street East / Lexington Road & Marsland Drive

The intersection of Columbia Street East / Lexington Road & Marsland Drive is located approximately 1200 metres west of the development site, and serves as the access to the arterial road network for an employment area south of Columbia Street East and east of Weber Street North. As shown in **Exhibit 6-2**,

traffic volume increases through the intersection of Columbia Street East / Lexington Road & Marsland Drive are expected to be less than 10% in all cases, with the average increase being less than 5%. This small increase, when viewed in the context of minimal impacts to traffic operations at other intersections, suggests that the impacts to traffic operations at the intersection of Columbia Street East / Lexington Road & Marsland Drive will be similarly minimal.

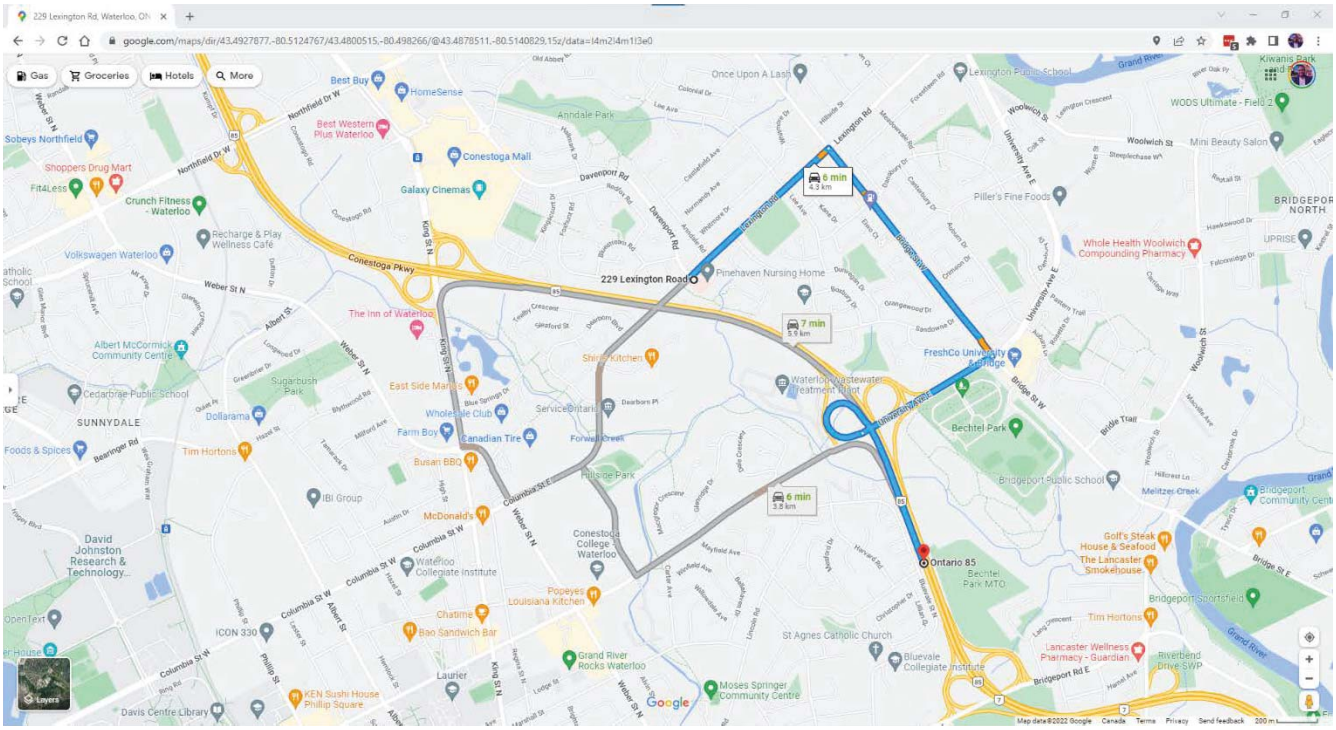
While it must be noted that Marsland Drive serves as a connection between Columbia Street East and University Avenue East and therefore may be used by development site traffic to access the Conestoga Parkway (Highway 85) interchange with University Avenue East, a review of comparative travel times was conducted to determine the likelihood of this shortcutting. Real-time estimates of travel times during a typical AM peak hour and PM peak hour are illustrated in **Exhibit 6-3** through **Exhibit 6-6**.

Exhibit 6-3: AM Peak Hour - Approaching Development Site



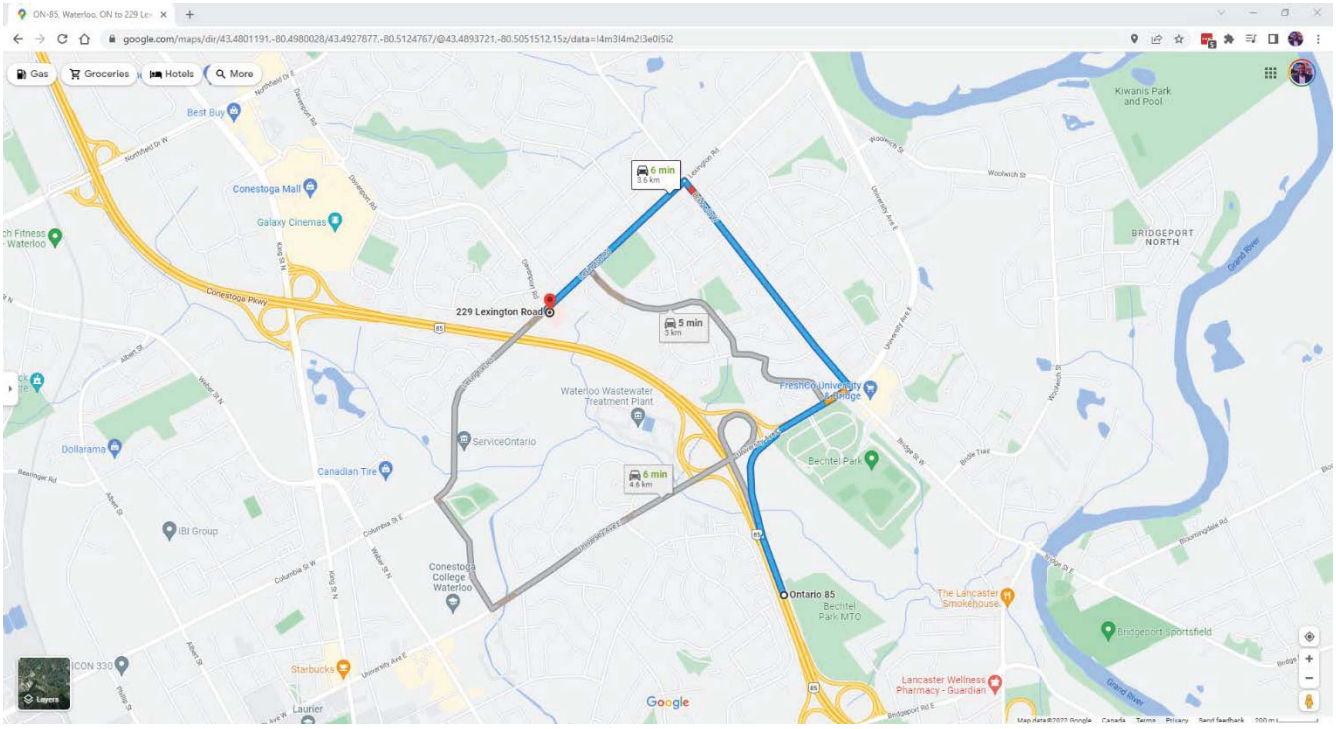
Base Map Source: Google Maps. Retrieved May 19, 2022 from https://maps.google.com/

Exhibit 6-4: AM Peak Hour - Departing Development Site



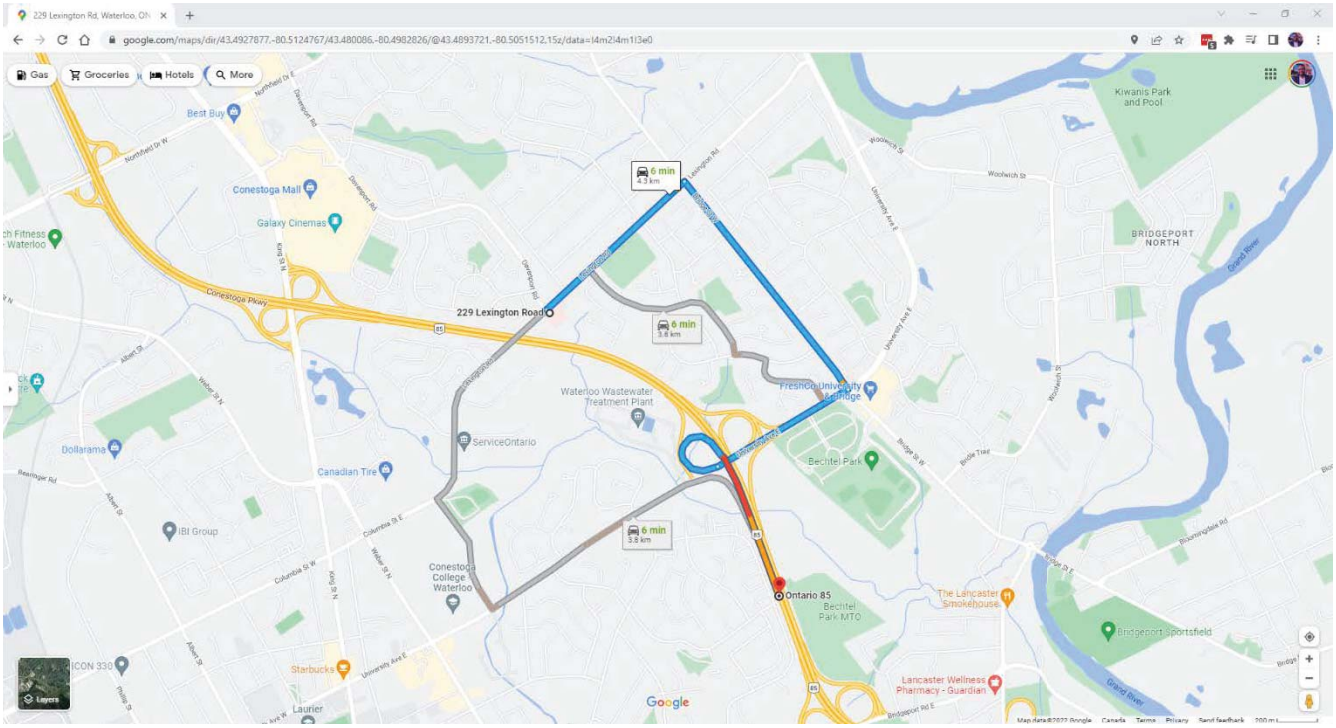
Base Map Source: Google Maps. Retrieved May 19, 2022 from https://maps.google.com/

Exhibit 6-5: PM Peak Hour - Approaching Development Site



Base Map Source: Google Maps. Retrieved May 18, 2022 from https://maps.google.com/

Exhibit 6-6: PM Peak Hour - Departing Development Site



Base Map Source: Google Maps. Retrieved May 19, 2022 from *https://maps.google.com/*

As shown in **Exhibit 6-3** through **Exhibit 6-6**, travel via Marsland Drive does not appear to offer any significant time savings compared to travel via Bridge Street for those travelling to and from the proposed development site. For travel to the development site, routes via Bridge Street are approximately 1 kilometre shorter than via Marsland Drive. Given comparable travel times, this suggests that Bridge Street will be preferred by approaching motorists. For travel from the development, while routes via Marsland Drive are approximately 500 metres shorter, this route involves two left-turns which can be perceived by motorists as introducing unnecessary delay. Travel via Bridge Street involves right-turns only, and travel times are comparable to other options. As a result, travel via Bridge Street is expected to be preferred by departing motorists.

7 Parking Analysis

The proposed development at 215 & 229 Lexington Road is designated in the Zoning By-Law as being located within a “RMU-zone” (specifically a “RMU-20”). Based on the review of City of Waterloo Zoning By-law No. 2018-050 (ZBL), for recently-constructed Phase 1 development, assisted living facility uses are to provide 1 parking space for every 3 units, and seniors apartment uses are to provide 0.7 parking space per unit. As 167 assisted living units and 49 senior apartment units have been constructed in Phase 1, the parking requirement would be 56 spaces for assisted living facility uses and 35 spaces for seniors apartment uses (a combined 91 parking spaces). As Phase 1 proposes to supply 80 parking spaces (56 spaces for assisted living facility uses and 24 spaces for seniors apartment uses) under a revised parking arrangement, a ZBL deficiency of 11 parking spaces is expected.

For Phase 2 development, apartment buildings are to provide 1.15 parking spaces per dwelling for residents, and 0.10 parking spaces per dwelling for visitors (a combined 1.25 parking spaces per dwelling) for apartment uses. As 447 apartment units are proposed in Phase 2, the parking requirement would be 515 spaces for residents and 45 spaces for visitors (a combined 560 parking spaces). As Phase 2 proposes to supply 471 parking spaces (447 spaces for residents and 24 spaces for visitors), a ZBL deficiency of 89 parking spaces is expected.

A summary of the parking requirements, proposed supply, and surplus / deficiency is presented in **Exhibit 7-1**.

Exhibit 7-1: ZBL Parking Requirements, City of Waterloo Zoning By-law No. 2018-050

Land Use	Proposed Units	Parking Rate Requirement (per unit)	Required Spaces
Phase 1			
Assisted Living Facility Parking Requirements			
Assisted Living Unit	167	0.33	56
Seniors Apartment Parking Requirements			
Seniors Apartment Unit	49	0.70	35
Total			
Required Parking (ZBL 2018-050 Site Specific Provision 99)			91
Proposed Parking Supply for Phase 1			80
Surplus/Deficiency (ZBL 2018-050 Site Specific Provision 99)			**-11**
Phase 2			
Resident Parking Requirements			
Residential Dwelling Unit Apartment Building	447	1.15	515
Visitor Parking Requirements			
Residential Dwelling Unit Apartment Building	447	0.10	45
Total			
Required Parking (ZBL 2018-050)			560
Proposed Parking Supply for Phase 2			471
Surplus/Deficiency (ZBL 2018-050)			**-89**
Combined Phase 1 and Phase 2			
Required Parking (ZBL 2018-050, as amended)			651
Proposed Parking Supply for Phase 1+2			551
Surplus/Deficiency			**-100**

Red *text indicates a ZBL deficiency*

In many cases, compliance with the ZBL parking requirements would likely result in an over-supply of parking in areas with convenient transit service, high-quality active transportation infrastructure, and land use patterns which feature good urban design and a mixture of uses in close proximity.

In addition, attitudes towards automobile usage are changing at both the personal and policy-maker level. Modern consumers are beginning to recognize that alternative forms of transportation are viable for many trips, and that car share systems, traditional taxis, and ridesharing is an option for times when automobile travel is unavoidable. In addition, the high cost of automobile ownership is difficult to justify in the face of rising housing costs in desirable neighbourhoods. For policy makers, there is a greater awareness of the

environmental impact of the car, and a recognition that designing for the automobile is at odds with developing desirable, sustainable urban spaces.

It must also be noted that a higher-density mid-rise development at 255 Northfield Drive East was approved at 1 parking space per dwelling unit. Like the proposed development, 255 Northfield Drive is located along a corridor which is served only by surface bus routes, which indicates that a reduced parking requirement can be supportable in areas served by transit but not necessarily directly on the ION LRT corridor. As transit travel times to the nearest ION LRT stop from 255 Northfield Drive are comparable to those expected for the proposed development at 215 & 229 Lexington Avenue, this suggests that a similarly reduced parking requirement can be supportable due to similar access to sustainable transportation services and facilities.

7.1 Phase 1 Parking Rate Reduction

With respect to Phase 1, is it our understanding that the existing parking supply is not fully utilized. Based on observations conducted by the operator, 47 dwellings – mostly seniors apartment units – are occupied while only 18 parking spaces are leased. This translates to a parking demand ratio of 0.38 spaces per occupied dwelling, and indicates that for seniors apartment uses (which are expected to have much higher parking demand than assisted living uses), only 19 spaces would be required to accommodate demand for 49 dwellings. As Phase 1 was initially required to provide 35 spaces for seniors apartment uses, this suggests that an oversupply of parking will be present at full occupancy.

Based on a reconciliation of parking spaces originally constructed for Phase 1 and parking proposed for Phase 2, a revised parking supply of 80 spaces for Phase 1 has been proposed. This parking supply corresponds to a parking ratio maintained at 1 space per 3 units for assisted living uses (56 spaces), but reduced from 0.7 spaces per unit for seniors apartment uses (35 spaces) to 0.48 spaces per units for seniors apartment uses (24 spaces). This revised ratio would accommodate the observed demand, and is in line with or higher than parking requirements for retirement homes in municipalities with comparable or comparably lower transit access than the City of Waterloo, such as the municipalities listed in **Exhibit 7-2**.

Exhibit 7-2: Parking Requirements for Seniors Accommodations

Movement	Future Background Volume
Selected Municipalities with Seniors Apartment (i.e. "Independent Living") Parking Requirements	
Town of Whitby	0.25 spaces per dwelling
Township of King	0.25 spaces per dwelling
City of Richmond Hill	0.33 spaces per dwelling
Township of East Garafraxa	0.25 spaces per bed
Selected Municipalities with blended Seniors Apartment (i.e. "Independent Living") / Assisted Living Parking Requirements	
Town of Oakville	0.33 spaces per dwelling
City of Welland	0.25 spaces per dwelling
Town of Grimsby	0.35 spaces per dwelling
Municipality of Brighton	0.25 spaces per dwelling
Municipality of Trent Hills	0.25 spaces per dwelling
Township of Cramhe	0.25 spaces per dwelling
Township of Alnwick / Haldimand	0.25 spaces per dwelling
Township of Douro-Dummer	0.25 spaces per dwelling
Township of Otonabee-South Monaghan	0.25 spaces per dwelling
Municipality of Clarington	0.25 spaces per bed
City of Pickering	0.25 spaces per bed
Township of Brock	0.25 spaces per bed
City of Hamilton	0.33 spaces per bed
City of Vaughan	0.25 spaces per bed
Town of Whitchurch-Stouffville	0.33 spaces per bed
City of Brantford	0.33 spaces per bed
Haldimand County	0.33 spaces per bed

Based on the parking ratios presented in **Exhibit 7-2**, providing 56 spaces for assisted living uses and 24 spaces for seniors apartment uses in Phase 1 is in line with requirements in other municipalities.

In addition to the above review, it is our understanding that the Chartwell Clair Hills Retirement Residence, located at 530 Columbia Street West in the City of Waterloo, provides 49 spaces for 120 units of seniors apartments and assisted living uses (0.40 spaces per dwelling – comparative more parking than Phase 1 would provide under this revised parking supply). Like the proposed development, this residence is located away from the City's central transit spine and served only by surface bus routes. This suggests that, in addition to being in line with requirements in other municipalities, the proposed parking supply for Phase 1 is in line with similar uses in similar contexts within the City of Waterloo.

7.2 Sustainable Transportation Network

This section discusses the sustainable transportation network within the study area and examines how the presence of sustainable transportation reduces the need to maintain a personal automobile. This section documents the existing transit network in the vicinity of the development and discusses proposed transit services which will improve connections to other areas of the City. Cycling facilities are also discussed.

7.2.1 Development Area Transit Network

As discussed in **Exhibit 2-4**, the development site is located in close proximity to several Grand River Transit (GRT) bus routes, including bus route 29 and 31. These bus routes provide connections to the local and regional transit hubs and major retail and service destinations.

7.2.2 Development Area Active Transportation Network

As discussed in **Exhibit 2-5**, concrete sidewalks are provided on all study area roadways and bike lanes are provided along the Lexington Road, Davenport Road, and Bridge Street West.

7.3 Transportation Demand Management Incentives

Transportation Demand Management (TDM) refers to policies, incentives, and design features which encourage sustainable transportation choices. As the proposed development is along Grand River Transit routes and is a short bus ride away from the ION LRT Conestoga station, opportunities exist to encourage future residents to choose fast-frequent, reliable, high-quality transit over automobile ownership. In order to leverage this opportunity, it is recommended that the operator of the site make subsidized transit passes, equivalent to unlimited travel for 24 months, available to occupants of the proposed development upon request. As parking is proposed to be “unbundled” due to fewer resident parking spaces being proposed than there are proposed units, these incentives are expected to encourage future residents to elect not to acquire a parking space as an optional extra element to a unit.

According to the report **Integrating Demand Management into the Transportation Planning Process: A Desk Reference** (Federal Highway Administration, August 2012), financial incentives combined with paid parking at the development contributes to a 25%-30% vehicle trip reduction from baseline (i.e. ZBL) conditions. This incentive, combined with the addition of a real-time transit and transportation information screen, to be installed at an easily-accessible area for residents and visitors, is expected to reduce resident parking demand from 1.15 spaces per unit to 0.80 to 0.86 spaces per unit. This translates to an adjusted parking requirement for Phase 2 development of less than 430 spaces (of which 385 spaces would be resident spaces). As 471 parking spaces (447 spaces for residents and 24 spaces for visitors) are proposed, this suggests that the parking supply would be sufficient to

accommodate anticipated combined resident and visitor demand for Phase 2 of the proposed development.

Additional recommended TDM measures include the provision of bicycle repair tools to be located within common areas of the development. This measure is expected to incentivize cycling as a more feasible alternative to automobile ownership, and leverage the existing cycling facilities adjacent to the development site.

7.4 Parking Analysis Summary

The proposed development at 215 & 229 Lexington Road is designated in the Zoning By-Law as being located within a “RMU-zone” (specifically a “RMU-20”). Based on the review of City of Waterloo Zoning By-law No. 2018-050 (ZBL), for recently-constructed Phase 1 development, assisted living facility uses are to provide 1 parking space for every 3 units and seniors apartment uses are to provide 0.7 parking space per unit. As 167 assisted living units and 49 senior apartment units have been constructed in Phase 1, the parking requirement would be 56 spaces for assisted living facility and 35 spaces for seniors apartment (a combined 91 parking spaces). As Phase 1 proposes to supply 80 parking spaces (56 spaces for assisted living facility and 24 spaces for seniors apartment) under a revised parking arrangement, a ZBL deficiency of 11 parking spaces is expected.

For Phase 2 of the proposed development, apartment buildings are to provide 1.15 parking spaces per dwelling for residents, and 0.10 parking spaces per dwelling for visitors (a combined 1.25 parking spaces per dwelling) for apartment uses. As 447 apartment units are proposed in Phase 2, the parking requirement would be 515 spaces for residents and 45 spaces for visitors (a combined 560 parking spaces). As Phase 2 proposes to supply 471 parking spaces (447 spaces for residents and 24 spaces for visitors), a ZBL deficiency of 89 parking spaces is expected.

Combined, this translates to a proposed parking supply of 551 parking spaces, a parking requirement of 651 spaces, and a ZBL deficiency of 100 spaces.

With respect to Phase 1, is it our understanding that the existing parking supply is not fully utilized. Therefore the revised parking supply of 73 spaces corresponds to a parking ratio maintained at 1 space per 3 units for assisted living uses (56 spaces), but reduced from 0.7 spaces per unit for seniors apartment uses (35 spaces) to 0.48 spaces per units for seniors apartment uses (24 spaces). This revised ratio is in line with or higher than parking requirements for retirement homes in municipalities with comparable or comparably lower transit access than the City of Waterloo, as well as comparable uses within the City itself.

As the proposed development is well served by Grand River Transit routes, opportunities exist to encourage future residents to choose fast-frequent, reliable, high-quality transit over automobile ownership. In order to leverage this

opportunity, it is recommended that the operator of the site make subsidized transit passes, equivalent to unlimited travel for 24 months, available to occupants of the proposed development upon request. This is anticipated to result in a 25%-30% reduction in parking demand based on United States Federal Highway Administration research. It is recommended that this incentive be combined with the provision of bicycle repair tools in common areas for use by residents, as well as the provision of a real-time transit and transportation information screen to be installed at an easily-accessible area for residents and visitors. Based on the recommended transportation demand management incentives, this translates to an adjusted parking requirement for Phase 2 development of less than 430 spaces (of which 385 spaces would be resident spaces). As 471 parking spaces are proposed, this suggests that the parking supply would be sufficient to accommodate anticipated combined resident and visitor demand for Phase 2 of the proposed development.

When taken together, this suggests that the 551 parking spaces proposed for both Phase 1 and Phase 2 is expected to be sufficient to accommodate anticipated demand.

8 Conclusions

This section summarizes the key findings of this transportation impact study.

8.1 Traffic Operations Analysis

Based on the analysis presented in the transportation impact study, the proposed development is expected to generate up to 193 and 243 net new automobile trips during the Weekday AM and Weekday PM Peak hours, respectively.

Overall, the results of the traffic operations analysis indicate that no instances of vehicle delay exceeding critical thresholds are anticipated under mitigated conditions; and that turn lane storage, accessibility, and access blockage instances are largely comparable between scenarios. This indicates that the proposed development is expected to have a minimal impact on traffic operations within the study area.

To demonstrate the potential impacts of development site traffic to traffic operations within the study area, a comparison of signalized intersection operations under the 2027 Future Background Conditions and Future Total Conditions scenarios indicates that the maximum delay expected to be experienced by any movement is 3.7 seconds per vehicle. As this increase is likely to be imperceptible to the average road user, and as no new critical movements are created after the addition of development site traffic to the transportation network, this underscores the conclusions that the proposed development will have a minimal impact on traffic operations within the study area.

8.2 Parking Analysis

The proposed development at 215 & 229 Lexington Road is designated in the Zoning By-Law as being located within a “RMU-zone” (specifically a “RMU-20”). Based on the review of City of Waterloo Zoning By-law No. 2018-050 (ZBL), for recently-constructed Phase 1 development, assisted living facility uses are to provide 1 parking space for every 3 units and seniors apartment uses are to provide 0.7 parking space per unit. As 167 assisted living units and 49 senior apartment units have been constructed in Phase 1, the parking requirement would be 56 spaces for assisted living facility and 35 spaces for seniors apartment (a combined 91 parking spaces). As Phase 1 proposes to supply 80 parking spaces (56 spaces for assisted living facility and 24 spaces for seniors apartment) under a revised parking arrangement, a ZBL deficiency of 11 parking spaces is expected.

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As the proposed development is well served by Grand River Transit routes, opportunities exist to encourage future residents to choose fast-frequent, reliable, high-quality transit over automobile ownership. In order to leverage this opportunity, it is recommended that the operator of the site make subsidized transit passes, equivalent to unlimited travel for 24 months, available to occupants of the proposed development upon request. This is anticipated to result in a 25%-30% reduction in parking demand based on United States Federal Highway Administration research. It is recommended that this incentive be combined with the provision of bicycle repair tools in common areas for use by residents, as well as the provision of a real-time transit and transportation information screen to be installed at an easily-accessible area for residents and visitors. Based on the recommended transportation demand management incentives, this translates to an adjusted parking requirement for Phase 2 development of less than 430 spaces (of which 385 spaces would be resident spaces). As 471 parking spaces are proposed, this suggests that the parking supply would be sufficient to accommodate anticipated combined resident and visitor demand for Phase 2 of the proposed development.

When taken together, this suggests that the 551 parking spaces proposed for both Phase 1 and Phase 2 is expected to be sufficient to accommodate anticipated demand.

Appendix A

Scope of Investigation

Andrae Griffith

From: Andrae Griffith
Sent: Wednesday, January 5, 2022 2:03 PM
To: chris.dedman@waterloo.ca
Cc: Ray Lei
Subject: Transportation Impact Study Terms of Reference - 215 & 229 Lexington Road
Attachments: Waterloo Preconsultation - 215 Lexington Rd.pdf

Dear Mr. Dedman,

As you may be aware, IBI Group has been retained by Hygate Development Corporation to prepare a transportation impact study for a proposed development at 215 & 229 Lexington Road in the City of Waterloo. While Phase 1 of the development (216 seniors apartments) has been constructed, the TIS will focus on the combined Phase 2 + 3 (78 seniors apartments in a 7-storey building, and 343 seniors apartments in an up-to 11-storey building). As per the Region of Waterloo transportation impact study guidelines, please see our pre-study conference form attached for your review and acceptance. We trust that this scope of work is satisfactory, and we hope that you can advise on growth rates, other area developments, and the availability of historical turning movement counts for study area intersections at your earliest convenience.

We are happy to discuss our study methodology with you at your convenience, if required.

Sincerely,

Andrae Griffith
(he/him/his)

IBI GROUP
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Toronto ON M4V 2Y7 Canada
tel +1 416 596 1930 ext 61450





NOTE: This email message/attachments may contain privileged and confidential information. If received in error, please notify the sender and delete this e-mail message.
NOTE: Ce courriel peut contenir de l'information privilégiée et confidentielle. Si vous avez recu ce message par erreur, veuillez le mentionner immédiatement à l'expéditeur et effacer ce courriel.

APPENDIX A:
PRE-STUDY CONFERENCE FORM

Item	Description	Details
ISSUES		
1	List any issues expected that may impact the content or recommendations of the subject Transportation Impact Study.	☒ COVID-19 outbreak impacting traffic counts representative of typical conditions. Historical data will be requested from the City of Waterloo to inform adjustment factors to be applied to collected traffic counts. ○ ○ ○
INTRODUCTION		
2	Nature of application (Attach a drawing)	☒ Official Plan Amendment ☒ Zoning Amendment ○ Site Plan Control Application ○ Plan of Subdivision ○ Community Plan ○ Other
3	TIS process, and relevant policies, procedures and approvals	☒ Guidelines for the preparation of Transportation Impact Studies in Support of Development Applications ☒ Transportation Impact Studies Requirements for Capacity Analysis, Roundabouts, Turn Lanes ○ Safety Analysis Checklist ○ Policy and Procedures for Access onto Regional Roads
4	Public Meeting	○ Required ☒ Not Required
CONTEXT		
5	Study intersections (Intersections to be analyzed) Note: the consultant is responsible to identify any further intersections impacted as the study progresses.	○ 1) Columbia St East and Weber St N ○ 2) Lexington Rd and Davenport Rd / Existing West Site Access ○ 3) Lexington Rd and Existing East Site Access ○ 4) Lexington Rd and Bridge St W ○ ○ ○
6	Size and number of phases of development	○ Phase 1: 6-storey, 216 units - retirement home uses (CONSTRUCTED) ○ Phase 2: 343-unit building (varying heights, 11-storey maximum) ○ Phase 3: 7-storey, 78 units for retirement home uses ○ Phase 4: ○ Phase 5:
7	Approved and pending approval development applications	☒ - Background developments (approved or pending approval) ○ will be identified through a discussion with City staff. ○
8	Planned transportation system improvements	☒ - Any planned transportation network improvements will be ○ identified through a review of the City's Transportation Master Plan ○ and other relevant documentation.
TRAVEL DEMAND		
9	Horizon years	☒ 5 years from date of TIS ○ 5 years after full occupancy ○ Transportation Plan horizon for large scale projects ○ Interim years ○ Other…

Item	Description	Details
10	Peak hour determination	☒ AM weekday peak hour of adjacent roadway ☒ PM weekday peak hour of adjacent roadway ○ Saturday peak of adjacent roadway ○ AM weekday peak hour of development ○ PM weekday peak hour of development ○ Saturday peak of development ○ Other…
11	Background	☒ Historical traffic/transit counts ☒ ROW travel demand forecasts ○ Approved and pending approval development applications ○ Other…
12	Trip generation	☒ ITE average rates ☒ ITE fitted equation - Depending on sample sizes & data quality ○ Rates published elsewhere ○ Observed rates for similar areas ○ Observed rates for similar developments in the local area ○ Other…
13	Trip reductions (TDM, internal, pass-by)	☒ Transportation Demand Management Checklist ○ Published Travel Demand Management reductions ○ Observed Travel Demand Management reductions ○ ITE internal capture reductions for mixed-use developments ○ Observed internal capture reductions for mixed-use developments ○ ITE pass-by reductions ○ Observed pass-by reductions for similar developments ○ Other…
14	Trip distribution	☒ ITE trip distribution IN/OUT split ○ Regional travel demand ○ Population and employment distribution ○ Market analysis of catchment area ○ Other…
15	Trip assignment	☒ Local traffic pattern ☒ Site layout and access design ☒ Existing turning movements ☒ Other… - 2016 Transportation Tomorrow Survey
EVALUATION OF IMPACTS		
16	Traffic impact analysis (Use approved software)	☒ Unsignalized intersections ○ left turn warrant analysis ○ signal warrant analysis ☒ Signalized intersections ☒ LOS, v/c, delay, queuing ○ ROW saturation flow rates ☒ Existing signal timings for existing conditions ☒ Optimize signal timings for future conditions ○ Use existing cycle length to respect coordinated corridor ○ Queuing analysis ○ Roundabouts ○ Other…

Item	Description	Details
17	Roundabout feasibility (Use approved software)	○ Initial screening ○ Intersection control study (10 year horizon)
18	Transit assessment	☒ Frequency and hours of service ○ Presence of bus stops ○ Reliability of service ○ Passenger loads ○ Travel time ☒ Other - Planned transit improvements will be identified (if any) and considered for analysis purposes.
19	Pedestrian assessment	○ Presence, connectivity, and width of sidewalks ○ Barriers and buffers from traffic ○ Crossing opportunities at intersections ○ Delay at intersections ○ Number of driveways and traffic volumes at the driveways ○ Presence of illumination ○ Future needs (desire lines / policy / accessibility / demand) ○ Other - Planned improvements will be identified and discussed.
20	Cycling assessment	○ Presence of a dedicated facility ○ Network connectivity ○ Number and width of travel lanes adjacent to the route ○ Volume and speed of traffic ○ Percentage of trucks and buses encountered ○ Pavement condition ○ Presence of parking /showers/change rooms ○ Future needs (desire lines / policy / demand) ○ Other - Planned improvements will be identified and discussed.
21	Safety analysis	○ Road safety review ○ Collision risk analysis ○ Access conflict evaluation
22	Site access and circulation	○ Review sight distances at all new access points ○ Internal traffic controls ○ Loading facilities and access ○ Service/maintenance vehicle access ○ Emergency vehicle access
23	Submission format	☒ Three hard copies of main report including appendices (other than analysis results/output e.g. Synchro reports) ☒ Minimum one original hard copy must be sealed by a professional engineer ☒ Electronic copy of complete report and all appendices ☒ Electronic copy of operational analysis files (e.g. Synchro, Arcady ○ Electronic copy of all signal warrant calculation files ○ Other

Appendix B

Turning Movement Counts

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #21-160 - IBI Group

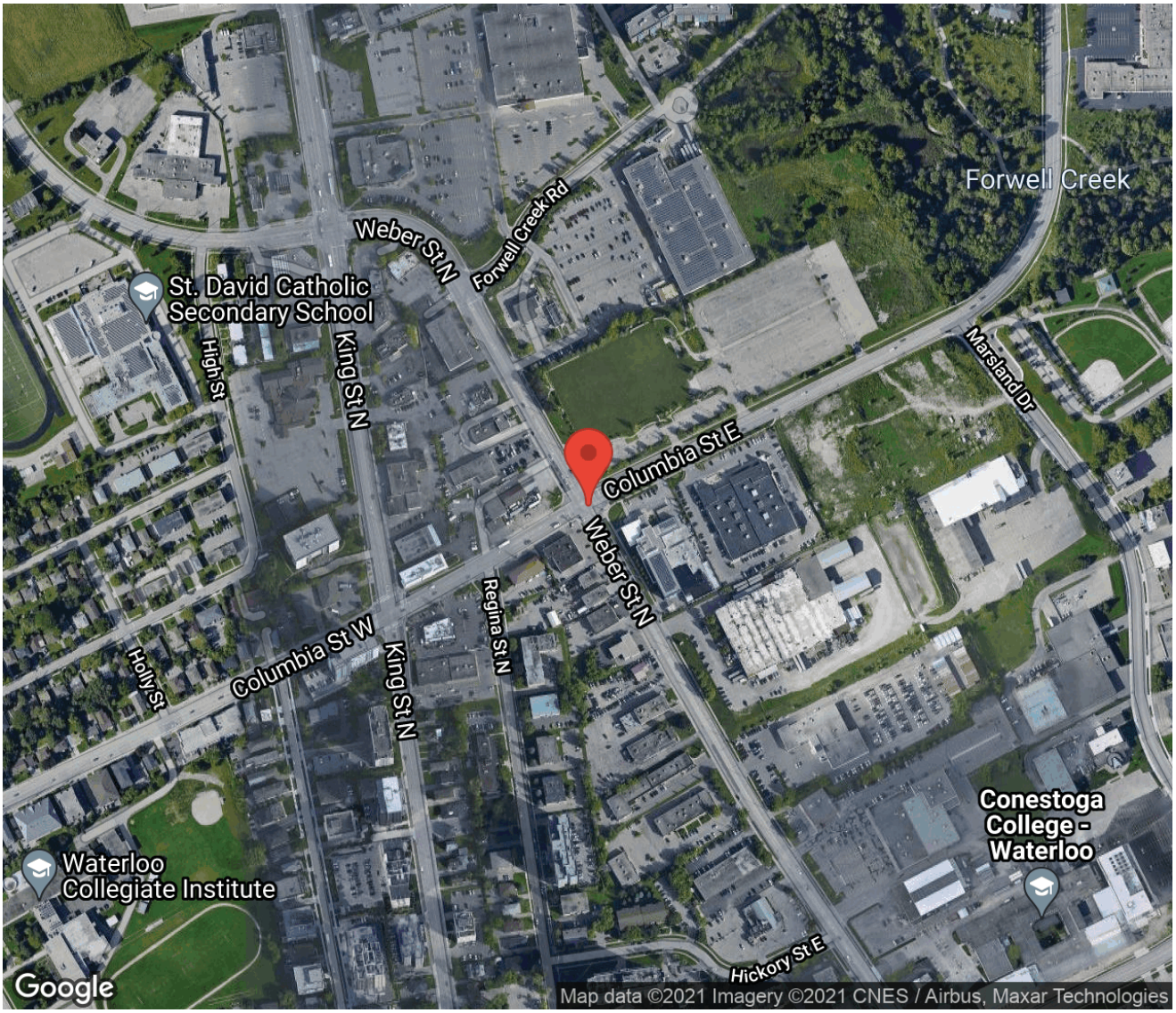
Intersection Count Report

Intersection:	Columbia St E & Weber St N
Municipality:	Waterloo
Count Date:	Dec 14, 2021
Site Code:	2116000001
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-09:00, 16:00-18:00
Weather:	Clear

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	Columbia St E & Weber St N
Site Code:	2116000001
Municipality:	Waterloo
Count Date:	Dec 14, 2021



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Columbia St E & Weber St N
Site Code:	2116000001
Municipality:	Waterloo
Count Date:	Dec 14, 2021

Weber St N - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	48	150	15	0	213	3	102	194	67	0	363	3	576
08:00 - 09:00	136	250	25	0	411	5	160	265	92	0	517	7	928
BREAK													
16:00 - 17:00	172	669	75	0	916	4	208	580	169	0	957	17	1873
17:00 - 18:00	151	492	69	0	712	5	229	513	174	0	916	3	1628
GRAND TOTAL	**507**	**1561**	**184**	**0**	**2252**	**17**	**699**	**1552**	**502**	**0**	**2753**	**30**	**5005**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Columbia St E & Weber St N
Site Code:	2116000001
Municipality:	Waterloo
Count Date:	Dec 14, 2021

Columbia St E - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	70	225	96	0	391	6	37	151	110	0	298	1	689
08:00 - 09:00	155	367	130	0	652	4	72	279	167	0	518	5	1170
BREAK													
16:00 - 17:00	235	406	150	0	791	8	125	541	248	0	914	6	1705
17:00 - 18:00	186	383	142	0	711	4	111	448	241	0	800	8	1511
GRAND TOTAL	**646**	**1381**	**518**	**0**	**2545**	**22**	**345**	**1419**	**766**	**0**	**2530**	**20**	**5075**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Columbia St E & Weber St N
Site Code: 2116000001
Municipality: Waterloo
Count Date: Dec 14, 2021

North Approach - Weber St N

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	8	20	3	0	31	0	2	0	0	2	0	1	0	0	1	1
07:15	5	32	4	0	41	2	1	0	0	3	0	0	0	0	0	0
07:30	9	45	2	0	56	1	0	1	0	2	0	0	0	0	0	1
07:45	23	47	5	0	75	0	2	0	0	2	0	0	0	0	0	1
08:00	52	71	4	0	127	2	6	0	0	8	0	0	0	0	0	4
08:15	33	57	4	0	94	0	2	0	0	2	0	0	0	0	0	0
08:30	26	37	7	0	70	1	2	0	0	3	0	0	0	0	0	1
08:45	21	71	10	0	102	1	4	0	0	5	0	0	0	0	0	0
SUBTOTAL	177	380	39	0	596	7	19	1	0	27	0	1	0	0	1	8

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Columbia St E & Weber St N
Site Code: 2116000001
Municipality: Waterloo
Count Date: Dec 14, 2021

North Approach - Weber St N

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	33	172	17	0	222	1	2	0	0	3	0	0	0	0	0	1
16:15	29	167	20	0	216	0	4	0	0	4	0	0	0	0	0	2
16:30	58	184	15	0	257	0	0	0	0	0	0	0	0	0	0	1
16:45	51	138	23	0	212	0	2	0	0	2	0	0	0	0	0	0
17:00	55	143	30	0	228	0	1	0	0	1	0	0	1	0	1	1
17:15	35	113	14	0	162	1	1	0	0	2	0	0	0	0	0	1
17:30	38	103	13	0	154	0	1	0	0	1	0	0	0	0	0	0
17:45	21	130	11	0	162	1	0	0	0	1	0	0	0	0	0	3
SUBTOTAL	320	1150	143	0	1613	3	11	0	0	14	0	0	1	0	1	9
GRAND TOTAL	497	1530	182	0	2209	10	30	1	0	41	0	1	1	0	2	17

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Columbia St E & Weber St N
Site Code: 2116000001
Municipality: Waterloo
Count Date: Dec 14, 2021

South Approach - Weber St N

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	15	28	14	0	57	0	2	0	0	2	0	0	0	0	0	0
07:15	21	33	14	0	68	0	4	1	0	5	0	0	0	0	0	0
07:30	37	45	17	0	99	0	1	1	0	2	0	0	0	0	0	3
07:45	27	75	19	0	121	2	6	1	0	9	0	0	0	0	0	0
08:00	43	54	17	0	114	0	3	1	0	4	0	0	0	0	0	4
08:15	46	67	35	0	148	1	2	1	0	4	0	0	0	0	0	1
08:30	33	61	13	0	107	1	3	2	0	6	0	0	0	0	0	2
08:45	36	74	23	0	133	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	258	437	152	0	847	4	22	7	0	33	0	0	0	0	0	10

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Columbia St E & Weber St N
Site Code: 2116000001
Municipality: Waterloo
Count Date: Dec 14, 2021

South Approach - Weber St N

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	56	148	35	0	239	4	3	0	0	7	0	0	0	0	0	5
16:15	56	144	43	0	243	0	6	0	0	6	0	0	0	0	0	4
16:30	49	144	44	0	237	1	2	0	0	3	0	0	0	0	0	7
16:45	41	132	47	0	220	1	1	0	0	2	0	0	0	0	0	1
17:00	56	140	44	0	240	1	2	1	0	4	0	0	0	0	0	0
17:15	50	140	34	0	224	0	1	0	0	1	0	0	0	0	0	3
17:30	60	109	46	0	215	0	0	0	0	0	0	0	0	0	0	0
17:45	62	121	49	0	232	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	430	1078	342	0	1850	7	15	1	0	23	0	0	0	0	0	20
GRAND TOTAL	**688**	**1515**	**494**	**0**	**2697**	**11**	**37**	**8**	**0**	**56**	**0**	**0**	**0**	**0**	**0**	**30**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Columbia St E & Weber St N
Site Code: 2116000001
Municipality: Waterloo
Count Date: Dec 14, 2021

East Approach - Columbia St E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	18	27	9	0	54	0	3	1	0	4	0	0	0	0	0	0
07:15	18	46	11	0	75	0	5	2	0	7	0	0	0	0	0	0
07:30	13	56	18	0	87	0	4	1	0	5	0	1	0	0	1	6
07:45	20	80	46	0	146	1	3	8	0	12	0	0	0	0	0	0
08:00	34	123	61	0	218	1	4	1	0	6	0	1	0	0	1	0
08:15	33	83	24	0	140	2	2	1	0	5	0	0	0	0	0	2
08:30	43	84	19	0	146	0	3	3	0	6	0	0	0	0	0	2
08:45	42	64	20	0	126	0	3	1	0	4	0	0	0	0	0	0
SUBTOTAL	221	563	208	0	992	4	27	18	0	49	0	2	0	0	2	10

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Columbia St E & Weber St N
Site Code: 2116000001
Municipality: Waterloo
Count Date: Dec 14, 2021

East Approach - Columbia St E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	58	84	43	0	185	0	2	1	0	3	0	0	0	0	0	2
16:15	58	106	29	0	193	1	0	1	0	2	0	0	0	0	0	3
16:30	59	109	40	0	208	1	1	0	0	2	0	0	0	0	0	3
16:45	58	104	36	0	198	0	0	0	0	0	0	0	0	0	0	0
17:00	45	101	37	0	183	0	1	0	0	1	0	0	0	0	0	0
17:15	49	99	39	0	187	0	1	0	0	1	0	0	0	0	0	2
17:30	47	94	29	0	170	0	1	1	0	2	0	0	0	0	0	0
17:45	45	85	36	0	166	0	1	0	0	1	0	0	0	0	0	2
SUBTOTAL	419	782	289	0	1490	2	7	3	0	12	0	0	0	0	0	12
GRAND TOTAL	**640**	**1345**	**497**	**0**	**2482**	**6**	**34**	**21**	**0**	**61**	**0**	**2**	**0**	**0**	**2**	**22**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Columbia St E & Weber St N
Site Code: 2116000001
Municipality: Waterloo
Count Date: Dec 14, 2021

West Approach - Columbia St E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	4	27	21	0	52	0	2	0	0	2	0	0	0	0	0	0
07:15	8	29	24	0	61	0	1	0	0	1	0	0	0	0	0	0
07:30	11	39	28	0	78	1	2	2	0	5	0	0	0	0	0	0
07:45	13	47	34	0	94	0	4	1	0	5	0	0	0	0	0	1
08:00	16	71	35	0	122	0	0	0	0	0	0	0	0	0	0	1
08:15	17	67	45	0	129	0	2	0	0	2	0	0	0	0	0	1
08:30	20	68	35	0	123	0	3	2	0	5	0	0	0	0	0	1
08:45	19	65	49	0	133	0	3	1	0	4	0	0	0	0	0	2
SUBTOTAL	108	413	271	0	792	1	17	6	0	24	0	0	0	0	0	6

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Columbia St E & Weber St N
Site Code: 2116000001
Municipality: Waterloo
Count Date: Dec 14, 2021

West Approach - Columbia St E

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	30	140	71	0	241	1	0	3	0	4	0	0	0	0	0	2
16:15	30	126	71	0	227	1	3	1	0	5	0	1	0	0	1	1
16:30	37	147	56	0	240	0	1	0	0	1	0	0	0	0	0	3
16:45	25	121	46	0	192	0	2	0	0	2	1	0	0	0	1	0
17:00	20	115	74	0	209	0	1	1	0	2	0	0	0	0	0	4
17:15	26	84	62	0	172	0	2	0	0	2	0	0	0	0	0	1
17:30	29	123	51	0	203	0	3	1	0	4	0	0	0	0	0	1
17:45	36	119	51	0	206	0	1	1	0	2	0	0	0	0	0	2
SUBTOTAL	233	975	482	0	1690	2	13	7	0	22	1	1	0	0	2	14
GRAND TOTAL	341	1388	753	0	2482	3	30	13	0	46	1	1	0	0	2	20

Peak Hour Diagram

Specified Period
From: 07:00:00
To: 09:00:00

One Hour Peak
From: 08:00:00
To: 09:00:00

Intersection: Columbia St E & Weber St N
Site Code: 2116000001
Count Date: Dec 14, 2021

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Columbia St E runs E/W

North Approach

	Out	In	Total
Cars	393	452	845
Trucks	18	15	33
Bicycles	0	0	0
	411	**467**	**878**

Weber St N

Bicycles	0	0	0	0
Trucks	0	14	4	0
Cars	25	236	132	0
Totals	**25**	**250**	**136**	**0**

East Approach

	Out	In	Total
Cars	630	491	1121
Trucks	21	16	37
Bicycles	1	0	1
	652	**507**	**1159**

Peds: 5

Columbia St E

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	0	72	**72**
0	8	271	**279**
0	3	164	**167**

Peds: 5



Peds: 4

Columbia St E

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	130	124	6	0
	367	354	12	1
	155	152	3	0

Peds: 7

West Approach

	Out	In	Total
Cars	507	537	1044
Trucks	11	14	25
Bicycles	0	1	1
	518	**552**	**1070**

Weber St N

Totals	**160**	**265**	**92**	**0**
Cars	158	256	88	0
Trucks	2	9	4	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	502	552	1054
Trucks	15	20	35
Bicycles	0	0	0
	517	**572**	**1089**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Columbia St E & Weber St N
Site Code: 2116000001
Count Date: Dec 14, 2021
Period: 07:00 - 09:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach Weber St N						South Approach Weber St N						East Approach Columbia St E						West Approach Columbia St E						Total Vehicles
	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	↰	↑	↱	↶	Peds	Total	
08:00	54	77	4	0	4	135	43	57	18	0	4	118	35	128	62	0	0	225	16	71	35	0	1	122	600
08:15	33	59	4	0	0	96	47	69	36	0	1	152	35	85	25	0	2	145	17	69	45	0	1	131	524
08:30	27	39	7	0	1	73	34	64	15	0	2	113	43	87	22	0	2	152	20	71	37	0	1	128	466
08:45	22	75	10	0	0	107	36	75	23	0	0	134	42	67	21	0	0	130	19	68	50	0	2	137	508
Grand Total	**136**	**250**	**25**	**0**	**5**	**411**	**160**	**265**	**92**	**0**	**7**	**517**	**155**	**367**	**130**	**0**	**4**	**652**	**72**	**279**	**167**	**0**	**5**	**518**	**2098**
Approach %	33.1	60.8	6.1	0		-	30.9	51.3	17.8	0		-	23.8	56.3	19.9	0		-	13.9	53.9	32.2	0		-	
Totals %	6.5	11.9	1.2	0		19.6	7.6	12.6	4.4	0		24.6	7.4	17.5	6.2	0		31.1	3.4	13.3	8	0		24.7	
PHF	**0.63**	**0.81**	**0.63**	**0**		**0.76**	**0.85**	**0.88**	**0.64**	**0**		**0.85**	**0.9**	**0.72**	**0.52**	**0**		**0.72**	**0.9**	**0.98**	**0.84**	**0**		**0.95**	**0.87**
Cars	132	236	25	0		393	158	256	88	0		502	152	354	124	0		630	72	271	164	0		507	2032
% Cars	97.1	94.4	100	0		95.6	98.8	96.6	95.7	0		97.1	98.1	96.5	95.4	0		96.6	100	97.1	98.2	0		97.9	96.9
Trucks	4	14	0	0		18	2	9	4	0		15	3	12	6	0		21	0	8	3	0		11	65
% Trucks	2.9	5.6	0	0		4.4	1.3	3.4	4.3	0		2.9	1.9	3.3	4.6	0		3.2	0	2.9	1.8	0		2.1	3.1
Bicycles	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	1
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0.3	0	0		0.2	0	0	0	0		0	0
Peds					5	-					7	-					4	-					5	-	21
% Peds					23.8	-					33.3	-					19	-					23.8	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	16:00:00	From:	16:00:00
To:	18:00:00	To:	17:00:00

Intersection: Columbia St E & Weber St N
Site Code: 2116000001
Count Date: Dec 14, 2021

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Columbia St E runs E/W

North Approach

	Out	In	Total
Cars	907	838	1745
Trucks	9	16	25
Bicycles	0	1	1
	916	**855**	**1771**

Weber St N

Bicycles	0	0	0	0
Trucks	0	8	1	0
Cars	75	661	171	0
Totals	**75**	**669**	**172**	**0**

East Approach

	Out	In	Total
Cars	784	874	1658
Trucks	7	7	14
Bicycles	0	1	1
	791	**882**	**1673**

Peds: 4

Columbia St E

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
1	2	122	**125**
1	6	534	**541**
0	4	244	**248**

Peds: 6



Peds: 8

Columbia St E

Totals	Cars	Trucks	Bicycles
0	0	0	0
150	148	2	0
406	403	3	0
235	233	2	0

Peds: 17

West Approach

	Out	In	Total
Cars	900	680	1580
Trucks	12	9	21
Bicycles	2	0	2
	914	**689**	**1603**

Totals	**208**	**580**	**169**	**0**
Cars	202	568	169	0
Trucks	6	12	0	0
Bicycles	0	0	0	0

Weber St N

South Approach

	Out	In	Total
Cars	939	1138	2077
Trucks	18	14	32
Bicycles	0	0	0
	957	**1152**	**2109**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection:	Columbia St E & Weber St N
Site Code:	2116000001
Count Date:	Dec 14, 2021
Period:	16:00 - 18:00

Peak Hour Data (16:00 - 17:00)

Start Time	North Approach Weber St N						South Approach Weber St N						East Approach Columbia St E						West Approach Columbia St E						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:00	34	174	17	0	1	225	60	151	35	0	5	246	58	86	44	0	2	188	31	140	74	0	2	245	904
16:15	29	171	20	0	2	220	56	150	43	0	4	249	59	106	30	0	3	195	31	130	72	0	1	233	897
16:30	58	184	15	0	1	257	50	146	44	0	7	240	60	110	40	0	3	210	37	148	56	0	3	241	948
16:45	51	140	23	0	0	214	42	133	47	0	1	222	58	104	36	0	0	198	26	123	46	0	0	195	829
Grand Total	**172**	**669**	**75**	**0**	**4**	**916**	**208**	**580**	**169**	**0**	**17**	**957**	**235**	**406**	**150**	**0**	**8**	**791**	**125**	**541**	**248**	**0**	**6**	**914**	**3578**
Approach %	18.8	73	8.2	0		-	21.7	60.6	17.7	0		-	29.7	51.3	19	0		-	13.7	59.2	27.1	0		-	
Totals %	4.8	18.7	2.1	0		25.6	5.8	16.2	4.7	0		26.7	6.6	11.3	4.2	0		22.1	3.5	15.1	6.9	0		25.5	
PHF	**0.74**	**0.91**	**0.82**	**0**		**0.89**	**0.87**	**0.96**	**0.9**	**0**		**0.96**	**0.98**	**0.92**	**0.85**	**0**		**0.94**	**0.84**	**0.91**	**0.84**	**0**		**0.93**	**0.94**
Cars	171	661	75	0		907	202	568	169	0		939	233	403	148	0		784	122	534	244	0		900	3530
% Cars	99.4	98.8	100	0		99	97.1	97.9	100	0		98.1	99.1	99.3	98.7	0		99.1	97.6	98.7	98.4	0		98.5	98.7
Trucks	1	8	0	0		9	6	12	0	0		18	2	3	2	0		7	2	6	4	0		12	46
% Trucks	0.6	1.2	0	0		1	2.9	2.1	0	0		1.9	0.9	0.7	1.3	0		0.9	1.6	1.1	1.6	0		1.3	1.3
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	1	1	0	0		2	2
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0.8	0.2	0	0		0.2	0.1
Peds					4	-					17	-					8	-					6	-	35
% Peds					11.4	-					48.6	-					22.9	-					17.1	-	

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Project #21-160 - IBI Group

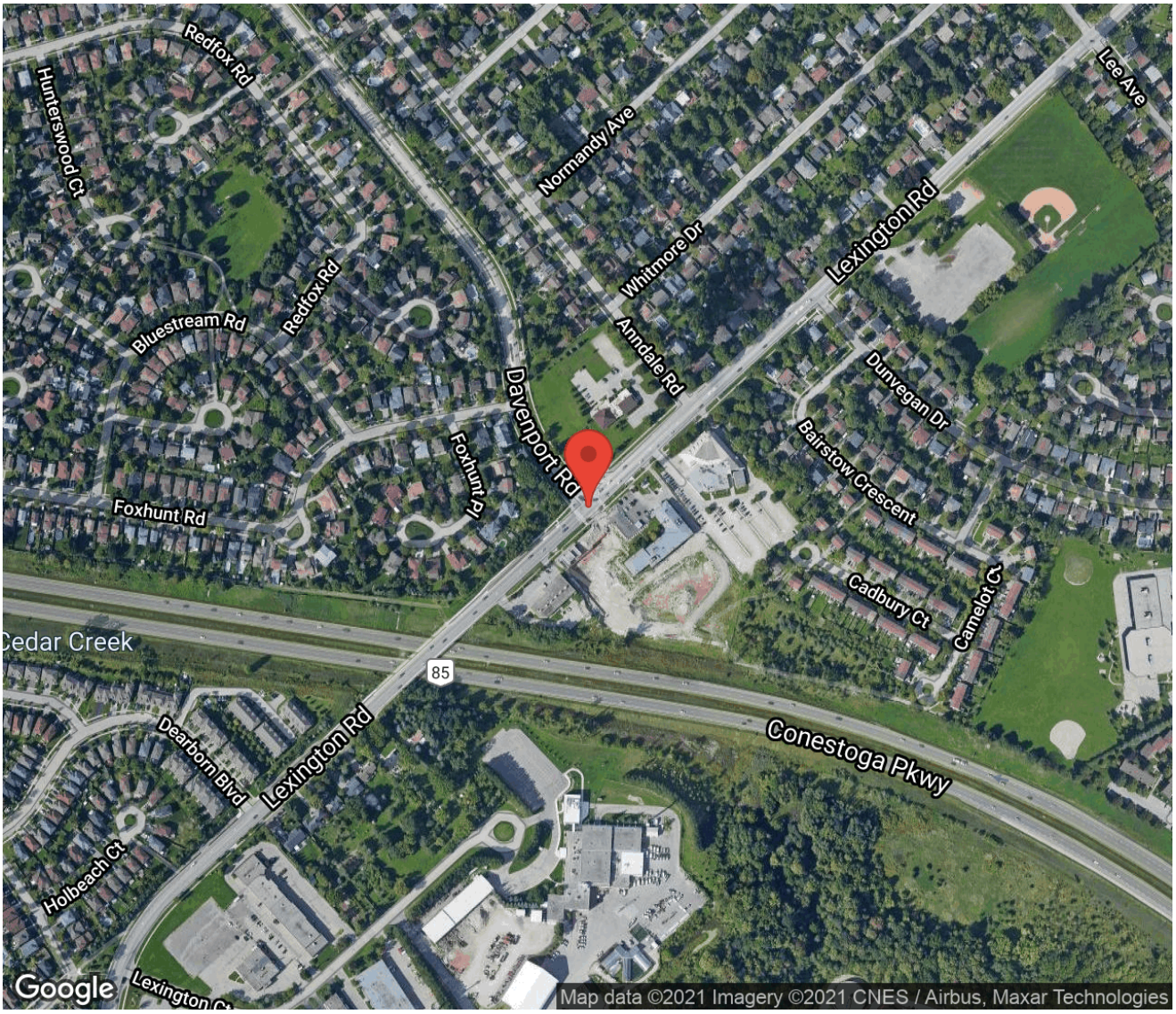
Intersection Count Report

Intersection:	Lexington Rd & Davenport Rd-Private Access
Municipality:	Waterloo
Count Date:	Dec 14, 2021
Site Code:	2116000002
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-09:00, 16:00-18:00
Weather:	Clear

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Traffic Count Map

Intersection:	Lexington Rd & Davenport Rd-Private Access
Site Code:	2116000002
Municipality:	Waterloo
Count Date:	Dec 14, 2021



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Traffic Count Summary

Intersection:	Lexington Rd & Davenport Rd-Private Access
Site Code:	2116000002
Municipality:	Waterloo
Count Date:	Dec 14, 2021

Davenport Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	76	0	124	0	200	3	1	0	0	0	1	1	201
08:00 - 09:00	135	0	235	0	370	14	0	0	1	0	1	11	371
BREAK													
16:00 - 17:00	326	0	323	0	649	7	2	1	3	0	6	4	655
17:00 - 18:00	299	0	377	0	676	5	1	0	1	0	2	0	678
GRAND TOTAL	**836**	**0**	**1059**	**0**	**1895**	**29**	**4**	**1**	**5**	**0**	**10**	**16**	**1905**

Ontario Traffic Inc.
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Traffic Count Summary

Intersection:	Lexington Rd & Davenport Rd-Private Access
Site Code:	2116000002
Municipality:	Waterloo
Count Date:	Dec 14, 2021

Lexington Rd - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	0	263	96	0	359	0	77	120	3	0	200	1	559
08:00 - 09:00	0	451	129	0	580	5	152	263	2	0	417	12	997
BREAK													
16:00 - 17:00	0	340	254	0	594	1	255	461	3	0	719	1	1313
17:00 - 18:00	0	361	230	0	591	7	184	519	1	0	704	3	1295
GRAND TOTAL	**0**	**1415**	**709**	**0**	**2124**	**13**	**668**	**1363**	**9**	**0**	**2040**	**17**	**4164**

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Traffic Count Data

Intersection: Lexington Rd & Davenport Rd-Private Access
Site Code: 2116000002
Municipality: Waterloo
Count Date: Dec 14, 2021

North Approach - Davenport Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	11	0	21	0	32	1	0	0	0	1	0	0	0	0	0	0
07:15	17	0	26	0	43	0	0	0	0	0	0	0	0	0	0	0
07:30	17	0	23	0	40	4	0	0	0	4	0	0	0	0	0	0
07:45	25	0	54	0	79	1	0	0	0	1	0	0	0	0	0	3
08:00	35	0	75	0	110	4	0	1	0	5	0	0	1	0	1	6
08:15	25	0	42	0	67	1	0	1	0	2	0	0	0	0	0	1
08:30	24	0	52	0	76	4	0	0	0	4	1	0	0	0	1	4
08:45	41	0	61	0	102	0	0	2	0	2	0	0	0	0	0	3
SUBTOTAL	195	0	354	0	549	15	0	4	0	19	1	0	1	0	2	17

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Traffic Count Data

Intersection: Lexington Rd & Davenport Rd-Private Access
Site Code: 2116000002
Municipality: Waterloo
Count Date: Dec 14, 2021

North Approach - Davenport Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	80	0	72	0	152	1	0	0	0	1	0	0	0	0	0	1
16:15	86	0	78	0	164	0	0	1	0	1	0	0	1	0	1	3
16:30	86	0	102	0	188	1	0	1	0	2	0	0	0	0	0	1
16:45	72	0	68	0	140	0	0	0	0	0	0	0	0	0	0	2
17:00	67	0	91	0	158	0	0	0	0	0	0	0	0	0	0	1
17:15	65	0	87	0	152	0	0	1	0	1	0	0	0	0	0	2
17:30	84	0	103	0	187	2	0	1	0	3	0	0	0	0	0	1
17:45	80	0	93	0	173	1	0	1	0	2	0	0	0	0	0	1
SUBTOTAL	620	0	694	0	1314	5	0	5	0	10	0	0	1	0	1	12
GRAND TOTAL	**815**	**0**	**1048**	**0**	**1863**	**20**	**0**	**9**	**0**	**29**	**1**	**0**	**2**	**0**	**3**	**29**

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Lexington Rd & Davenport Rd-Private Access
Site Code: 2116000002
Municipality: Waterloo
Count Date: Dec 14, 2021

South Approach - Commerical Entrance

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
SUBTOTAL	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	12

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Lexington Rd & Davenport Rd-Private Access
Site Code: 2116000002
Municipality: Waterloo
Count Date: Dec 14, 2021

South Approach - Commerical Entrance

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	2
16:15	1	0	0	0	1	0	0	0	0	0	0	1	0	0	1	2
16:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	3	0	4	0	7	0	0	0	0	0	0	1	0	0	1	4
GRAND TOTAL	**4**	**0**	**5**	**0**	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**	**16**

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Traffic Count Data

Intersection: Lexington Rd & Davenport Rd-Private Access
Site Code: 2116000002
Municipality: Waterloo
Count Date: Dec 14, 2021

East Approach - Lexington Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	0	37	14	0	51	0	1	0	0	1	0	0	0	0	0	0
07:15	0	40	25	0	65	0	2	0	0	2	0	0	0	0	0	0
07:30	0	56	25	0	81	0	5	0	0	5	0	1	0	0	1	0
07:45	0	119	31	0	150	0	2	1	0	3	0	0	0	0	0	0
08:00	0	131	27	0	158	0	2	1	0	3	0	1	0	0	1	1
08:15	0	111	33	0	144	0	1	0	0	1	0	0	0	0	0	2
08:30	0	104	30	0	134	0	1	2	0	3	0	0	0	0	0	2
08:45	0	98	34	0	132	0	1	2	0	3	0	1	0	0	1	0
SUBTOTAL	0	696	219	0	915	0	15	6	0	21	0	3	0	0	3	5

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Traffic Count Data

Intersection: Lexington Rd & Davenport Rd-Private Access
Site Code: 2116000002
Municipality: Waterloo
Count Date: Dec 14, 2021

East Approach - Lexington Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	
16:00	0	93	57	0	150	0	1	3	0	4	0	0	0	0	0	0
16:15	0	76	44	0	120	0	0	0	0	0	0	2	0	0	2	0
16:30	0	66	74	0	140	0	2	1	0	3	0	0	0	0	0	1
16:45	0	100	75	0	175	0	0	0	0	0	0	0	0	0	0	0
17:00	0	61	76	0	137	0	2	3	0	5	0	0	0	0	0	0
17:15	0	104	46	0	150	0	0	0	0	0	0	0	0	0	0	4
17:30	0	97	60	0	157	0	1	1	0	2	0	0	0	0	0	0
17:45	0	95	43	0	138	0	1	1	0	2	0	0	0	0	0	3
SUBTOTAL	0	692	475	0	1167	0	7	9	0	16	0	2	0	0	2	8
GRAND TOTAL	**0**	**1388**	**694**	**0**	**2082**	**0**	**22**	**15**	**0**	**37**	**0**	**5**	**0**	**0**	**5**	**13**

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Lexington Rd & Davenport Rd-Private Access
Site Code: 2116000002
Municipality: Waterloo
Count Date: Dec 14, 2021

West Approach - Lexington Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	12	17	0	0	29	0	3	0	0	3	0	0	0	0	0	0
07:15	12	19	0	0	31	1	2	0	0	3	0	0	0	0	0	1
07:30	23	34	1	0	58	1	3	0	0	4	0	1	0	0	1	0
07:45	27	38	2	0	67	1	3	0	0	4	0	0	0	0	0	0
08:00	29	71	0	0	100	1	1	0	0	2	0	0	0	0	0	6
08:15	45	66	0	0	111	0	1	0	0	1	0	0	0	0	0	0
08:30	36	61	0	0	97	1	2	0	0	3	0	0	0	0	0	1
08:45	38	60	2	0	100	2	1	0	0	3	0	0	0	0	0	5
SUBTOTAL	222	366	5	0	593	7	16	0	0	23	0	1	0	0	1	13

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Traffic Count Data

Intersection: Lexington Rd & Davenport Rd-Private Access
Site Code: 2116000002
Municipality: Waterloo
Count Date: Dec 14, 2021

West Approach - Lexington Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	
16:00	67	118	1	0	186	1	0	0	0	1	0	1	0	0	1	0
16:15	65	107	0	0	172	0	3	0	0	3	0	1	0	0	1	0
16:30	65	110	2	0	177	0	1	0	0	1	0	0	0	0	0	0
16:45	57	117	0	0	174	0	3	0	0	3	0	0	0	0	0	1
17:00	37	115	0	0	152	0	0	0	0	0	0	0	0	0	0	0
17:15	42	131	0	0	173	0	1	0	0	1	0	2	0	0	2	2
17:30	46	123	1	0	170	0	0	0	0	0	0	0	0	0	0	0
17:45	59	144	0	0	203	0	3	0	0	3	0	0	0	0	0	1
SUBTOTAL	438	965	4	0	1407	1	11	0	0	12	0	4	0	0	4	4
GRAND TOTAL	**660**	**1331**	**9**	**0**	**2000**	**8**	**27**	**0**	**0**	**35**	**0**	**5**	**0**	**0**	**5**	**17**

Peak Hour Diagram

Specified Period
From: 07:00:00
To: 09:00:00

One Hour Peak
From: 08:00:00
To: 09:00:00

Intersection: Lexington Rd & Davenport Rd-Private Access
Site Code: 2116000002
Count Date: Dec 14, 2021

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Lexington Rd runs E/W

North Approach

	Out	In	Total
Cars	355	272	627
Trucks	13	9	22
Bicycles	2	0	2
	370	**281**	**651**

Davenport Rd

Bicycles	1	0	1	0
Trucks	4	0	9	0
Cars	230	0	125	0
Totals	**235**	**0**	**135**	**0**

East Approach

	Out	In	Total
Cars	568	384	952
Trucks	10	14	24
Bicycles	2	1	3
	580	**399**	**979**

Peds: 14

Lexington Rd

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	4	148	**152**
0	5	258	**263**
0	0	2	**2**

Peds: 12



Peds: 5

Lexington Rd

Totals	Cars	Trucks	Bicycles
0	0	0	0
129	124	5	0
451	444	5	2
0	0	0	0

Peds: 11

West Approach

	Out	In	Total
Cars	408	674	1082
Trucks	9	9	18
Bicycles	0	3	3
	417	**686**	**1103**

Commerical Entrance

Totals	**0**	**0**	**1**	**0**
Cars	0	0	1	0
Trucks	0	0	0	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	1	2	3
Trucks	0	0	0
Bicycles	0	0	0
	1	**2**	**3**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Lexington Rd & Davenport Rd-Private Access
Site Code: 2116000002
Count Date: Dec 14, 2021
Period: 07:00 - 09:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach Davenport Rd						South Approach Commerical Entrance						East Approach Lexington Rd						West Approach Lexington Rd						Total Vehicles
	↰	↑	↱	↩	Peds	Total	↰	↑	↱	↩	Peds	Total	↰	↑	↱	↩	Peds	Total	↰	↑	↱	↩	Peds	Total	
08:00	39	0	77	0	6	116	0	0	1	0	1	1	0	134	28	0	1	162	30	72	0	0	6	102	381
08:15	26	0	43	0	1	69	0	0	0	0	2	0	0	112	33	0	2	145	45	67	0	0	0	112	326
08:30	29	0	52	0	4	81	0	0	0	0	1	0	0	105	32	0	2	137	37	63	0	0	1	100	318
08:45	41	0	63	0	3	104	0	0	0	0	7	0	0	100	36	0	0	136	40	61	2	0	5	103	343
Grand Total	**135**	**0**	**235**	**0**	**14**	**370**	**0**	**0**	**1**	**0**	**11**	**1**	**0**	**451**	**129**	**0**	**5**	**580**	**152**	**263**	**2**	**0**	**12**	**417**	**1368**
Approach %	36.5	0	63.5	0		-	0	0	100	0		-	0	77.8	22.2	0		-	36.5	63.1	0.5	0		-	
Totals %	9.9	0	17.2	0		27	0	0	0.1	0		0.1	0	33	9.4	0		42.4	11.1	19.2	0.1	0		30.5	
PHF	**0.82**	**0**	**0.76**	**0**		**0.8**	**0**	**0**	**0.25**	**0**		**0.25**	**0**	**0.84**	**0.9**	**0**		**0.9**	**0.84**	**0.91**	**0.25**	**0**		**0.93**	**0.9**
Cars	125	0	230	0		355	0	0	1	0		1	0	444	124	0		568	148	258	2	0		408	1332
% Cars	92.6	0	97.9	0		95.9	0	0	100	0		100	0	98.4	96.1	0		97.9	97.4	98.1	100	0		97.8	97.4
Trucks	9	0	4	0		13	0	0	0	0		0	0	5	5	0		10	4	5	0	0		9	32
% Trucks	6.7	0	1.7	0		3.5	0	0	0	0		0	0	1.1	3.9	0		1.7	2.6	1.9	0	0		2.2	2.3
Bicycles	1	0	1	0		2	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	4
% Bicycles	0.7	0	0.4	0		0.5	0	0	0	0		0	0	0.4	0	0		0.3	0	0	0	0		0	0.3
Peds					14	-					11	-					5	-					12	-	42
% Peds					33.3	-					26.2	-					11.9	-					28.6	-	

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Peak Hour Diagram

Specified Period		One Hour Peak	
From:	16:00:00	From:	17:00:00
To:	18:00:00	To:	18:00:00

Intersection: Lexington Rd & Davenport Rd-Private Access
Site Code: 2116000002
Count Date: Dec 14, 2021

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Lexington Rd runs E/W

North Approach

	Out	In	Total
Cars	670	409	1079
Trucks	6	5	11
Bicycles	0	0	0
	676	**414**	**1090**

Davenport Rd

Bicycles	0	0	0	0
Trucks	3	0	3	0
Cars	374	0	296	0
Totals	**377**	**0**	**299**	**0**

Peds: 5

East Approach

	Out	In	Total
Cars	582	810	1392
Trucks	9	7	16
Bicycles	0	2	2
	591	**819**	**1410**

Lexington Rd

Bicycles	Trucks	Cars	Totals	
0	0	0	**0**	
0	0	184	**184**	
2	4	513	**519**	
0	0	1	**1**	

Peds: 3



Peds: 7

Lexington Rd

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	230	225	5	0
	361	357	4	0
	0	0	0	0

Peds: 0

West Approach

	Out	In	Total
Cars	698	732	1430
Trucks	4	7	11
Bicycles	2	0	2
	704	**739**	**1443**

Commerical Entrance

Totals	**1**	**0**	**1**	**0**
Cars	1	0	1	0
Trucks	0	0	0	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	2	1	3
Trucks	0	0	0
Bicycles	0	0	0
	2	**1**	**3**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Lexington Rd & Davenport Rd-Private Access
Site Code: 2116000002
Count Date: Dec 14, 2021
Period: 16:00 - 18:00

Peak Hour Data (17:00 - 18:00)

Start Time	North Approach Davenport Rd						South Approach Commerical Entrance						East Approach Lexington Rd						West Approach Lexington Rd						Total Vehicles
	↰	↑	↱	↩	Peds	Total	↰	↑	↱	↩	Peds	Total	↰	↑	↱	↩	Peds	Total	↰	↑	↱	↩	Peds	Total	
17:00	67	0	91	0	1	158	0	0	0	0	0	0	0	63	79	0	0	142	37	115	0	0	0	152	452
17:15	65	0	88	0	2	153	0	0	0	0	0	0	0	104	46	0	4	150	42	134	0	0	2	176	479
17:30	86	0	104	0	1	190	1	0	1	0	0	2	0	98	61	0	0	159	46	123	1	0	0	170	521
17:45	81	0	94	0	1	175	0	0	0	0	0	0	0	96	44	0	3	140	59	147	0	0	1	206	521
Grand Total	**299**	**0**	**377**	**0**	**5**	**676**	**1**	**0**	**1**	**0**	**0**	**2**	**0**	**361**	**230**	**0**	**7**	**591**	**184**	**519**	**1**	**0**	**3**	**704**	**1973**
Approach %	44.2	0	55.8	0		-	50	0	50	0		-	0	61.1	38.9	0		-	26.1	73.7	0.1	0		-	
Totals %	15.2	0	19.1	0		34.3	0.1	0	0.1	0		0.1	0	18.3	11.7	0		30	9.3	26.3	0.1	0		35.7	
PHF	**0.87**	**0**	**0.91**	**0**		**0.89**	**0.25**	**0**	**0.25**	**0**		**0.25**	**0**	**0.87**	**0.73**	**0**		**0.93**	**0.78**	**0.88**	**0.25**	**0**		**0.85**	**0.95**
Cars	296	0	374	0		670	1	0	1	0		2	0	357	225	0		582	184	513	1	0		698	1952
% Cars	99	0	99.2	0		99.1	100	0	100	0		100	0	98.9	97.8	0		98.5	100	98.8	100	0		99.1	98.9
Trucks	3	0	3	0		6	0	0	0	0		0	0	4	5	0		9	0	4	0	0		4	19
% Trucks	1	0	0.8	0		0.9	0	0	0	0		0	0	1.1	2.2	0		1.5	0	0.8	0	0		0.6	1
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	2	0	0		2	2
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0.4	0	0		0.3	0.1
Peds					5	-					0	-					7	-					3	-	15
% Peds					33.3	-					0	-					46.7	-					20	-	

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Project #21-160 - IBI Group

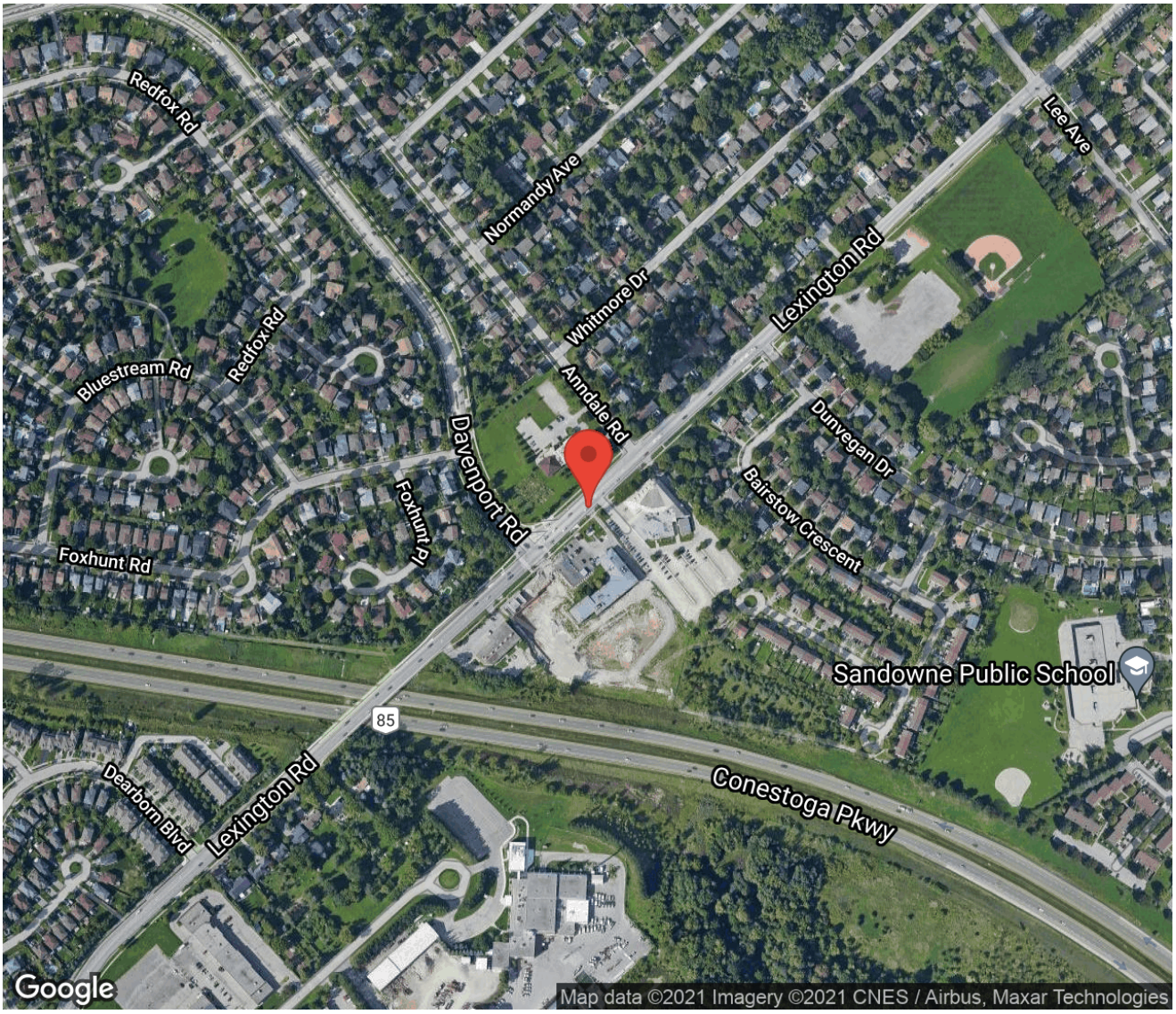
Intersection Count Report

Intersection:	Lexington Rd & 215-239 Lexington Rd (east side access)
Municipality:	Waterloo
Count Date:	Dec 14, 2021
Site Code:	2116000003
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-09:00, 16:00-18:00
Weather:	Clear

Ontario Traffic Inc.
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Traffic Count Map

Intersection:	Lexington Rd & 215-239 Lexington Rd (east side access)
Site Code:	2116000003
Municipality:	Waterloo
Count Date:	Dec 14, 2021



Ontario Traffic Inc.
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Traffic Count Summary

Intersection:	Lexington Rd & 215-239 Lexington Rd (east side access)
Site Code:	2116000003
Municipality:	Waterloo
Count Date:	Dec 14, 2021

215-239 Lexington Rd (east side access) - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	0	0	0	0	0	0	6	0	1	0	7	1	7
08:00 - 09:00	0	0	0	0	0	0	5	0	1	0	6	9	6
BREAK													
16:00 - 17:00	0	0	0	0	0	0	4	0	6	0	10	0	10
17:00 - 18:00	0	0	0	0	0	0	4	0	5	0	9	5	9
GRAND TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**19**	**0**	**13**	**0**	**32**	**15**	**32**

Ontario Traffic Inc.
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Traffic Count Summary

Intersection:	Lexington Rd & 215-239 Lexington Rd (east side access)
Site Code:	2116000003
Municipality:	Waterloo
Count Date:	Dec 14, 2021

Lexington Rd - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	5	359	0	0	364	0	0	193	3	0	196	1	560
08:00 - 09:00	4	569	0	0	573	0	0	398	1	0	399	0	972
BREAK													
16:00 - 17:00	1	590	0	0	591	0	0	788	0	0	788	0	1379
17:00 - 18:00	2	587	0	0	589	0	0	819	2	0	821	0	1410
GRAND TOTAL	**12**	**2105**	**0**	**0**	**2117**	**0**	**0**	**2198**	**6**	**0**	**2204**	**1**	**4321**

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Lexington Rd & 215-239 Lexington Rd (east side access)
Site Code: 2116000003
Municipality: Waterloo
Count Date: Dec 14, 2021

South Approach - 215-239 Lexington Rd (east side access)

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
07:15	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0
07:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
08:15	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
08:30	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0
08:45	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	8
SUBTOTAL	11	0	2	0	13	0	0	0	0	0	0	0	0	0	0	10

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Lexington Rd & 215-239 Lexington Rd (east side access)
Site Code: 2116000003
Municipality: Waterloo
Count Date: Dec 14, 2021

South Approach - 215-239 Lexington Rd (east side access)

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	
16:00	1	0	3	0	4	0	0	0	0	0	0	0	0	0	0	0
16:15	2	0	1	0	3	1	0	0	0	1	0	0	0	0	0	0
16:30	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
17:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
17:15	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	1
17:30	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
17:45	1	0	3	0	4	0	0	0	0	0	0	0	0	0	0	1
SUBTOTAL	7	0	11	0	18	1	0	0	0	1	0	0	0	0	0	5
GRAND TOTAL	**18**	**0**	**13**	**0**	**31**	**1**	**0**	**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**15**

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Lexington Rd & 215-239 Lexington Rd (east side access)
Site Code: 2116000003
Municipality: Waterloo
Count Date: Dec 14, 2021

East Approach - Lexington Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	1	48	0	0	49	0	1	0	0	1	0	0	0	0	0	0
07:15	1	64	0	0	65	0	2	0	0	2	0	0	0	0	0	0
07:30	1	79	0	0	80	0	5	0	0	5	0	1	0	0	1	0
07:45	2	156	0	0	158	0	3	0	0	3	0	0	0	0	0	0
08:00	0	150	0	0	150	0	3	0	0	3	0	1	0	0	1	0
08:15	3	144	0	0	147	0	0	0	0	0	0	0	0	0	0	0
08:30	0	133	0	0	133	0	4	0	0	4	0	0	0	0	0	0
08:45	1	130	0	0	131	0	3	0	0	3	0	1	0	0	1	0
SUBTOTAL	9	904	0	0	913	0	21	0	0	21	0	3	0	0	3	0

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Lexington Rd & 215-239 Lexington Rd (east side access)
Site Code: 2116000003
Municipality: Waterloo
Count Date: Dec 14, 2021

East Approach - Lexington Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
16:00	0	145	0	0	145	0	0	0	0	0	0	0	0	0	0	0
16:15	0	122	0	0	122	0	3	0	0	3	0	2	0	0	2	0
16:30	0	140	0	0	140	0	3	0	0	3	0	0	0	0	0	0
16:45	1	175	0	0	176	0	0	0	0	0	0	0	0	0	0	0
17:00	1	142	0	0	143	0	5	0	0	5	0	0	0	0	0	0
17:15	1	144	0	0	145	0	0	0	0	0	0	0	0	0	0	0
17:30	0	156	0	0	156	0	2	0	0	2	0	0	0	0	0	0
17:45	0	136	0	0	136	0	2	0	0	2	0	0	0	0	0	0
SUBTOTAL	3	1160	0	0	1163	0	15	0	0	15	0	2	0	0	2	0
GRAND TOTAL	**12**	**2064**	**0**	**0**	**2076**	**0**	**36**	**0**	**0**	**36**	**0**	**5**	**0**	**0**	**5**	**0**

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Lexington Rd & 215-239 Lexington Rd (east side access)
Site Code: 2116000003
Municipality: Waterloo
Count Date: Dec 14, 2021

West Approach - Lexington Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	0	28	0	0	28	0	4	0	0	4	0	0	0	0	0	0
07:15	0	31	2	0	33	0	4	0	0	4	0	0	0	0	0	0
07:30	0	54	0	0	54	0	5	0	0	5	0	1	0	0	1	1
07:45	0	62	1	0	63	0	4	0	0	4	0	0	0	0	0	0
08:00	0	105	1	0	106	0	5	0	0	5	0	0	0	0	0	0
08:15	0	92	0	0	92	0	5	0	0	5	0	0	0	0	0	0
08:30	0	85	0	0	85	0	3	0	0	3	0	1	0	0	1	0
08:45	0	101	0	0	101	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	0	558	4	0	562	0	31	0	0	31	0	2	0	0	2	1

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Lexington Rd & 215-239 Lexington Rd (east side access)
Site Code: 2116000003
Municipality: Waterloo
Count Date: Dec 14, 2021

West Approach - Lexington Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	
16:00	0	201	0	0	201	0	3	0	0	3	0	1	0	0	1	0
16:15	0	192	0	0	192	0	1	0	0	1	0	1	0	0	1	0
16:30	0	194	0	0	194	0	2	0	0	2	0	0	0	0	0	0
16:45	0	192	0	0	192	0	1	0	0	1	0	0	0	0	0	0
17:00	0	183	0	0	183	0	2	0	0	2	0	0	0	0	0	0
17:15	0	195	0	0	195	0	1	0	0	1	0	2	0	0	2	0
17:30	0	207	0	0	207	0	2	0	0	2	0	0	0	0	0	0
17:45	0	223	2	0	225	0	4	0	0	4	0	0	0	0	0	0
SUBTOTAL	0	1587	2	0	1589	0	16	0	0	16	0	4	0	0	4	0
GRAND TOTAL	**0**	**2145**	**6**	**0**	**2151**	**0**	**47**	**0**	**0**	**47**	**0**	**6**	**0**	**0**	**6**	**1**

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Peak Hour Diagram

Specified Period		One Hour Peak	
From:	07:00:00	From:	08:00:00
To:	09:00:00	To:	09:00:00

Intersection: Lexington Rd & 215-239 Lexington Rd (east side access)
Site Code: 2116000003
Count Date: Dec 14, 2021

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Lexington Rd runs E/W

East Approach

	Out	In	Total
Cars	561	384	945
Trucks	10	14	24
Bicycles	2	1	3
	573	**399**	**972**

Lexington Rd

Bicycles	Trucks	Cars	Totals	
0	0	0	**0**	
1	14	383	**398**	
0	0	1	**1**	

Peds: 0



Peds: 0

Peds: 9

Lexington Rd

Totals	Cars	Trucks	Bicycles
0	0	0	0
569	557	10	2
4	4	0	0

West Approach

	Out	In	Total
Cars	384	562	946
Trucks	14	10	24
Bicycles	1	2	3
	399	**574**	**973**

Totals	5	1	0
Cars	5	1	0
Trucks	0	0	0
Bicycles	0	0	0

215-239 Lexington Rd (east side access)

South Approach

	Out	In	Total
Cars	6	5	11
Trucks	0	0	0
Bicycles	0	0	0
	6	**5**	**11**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
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Peak Hour Summary

Intersection: Lexington Rd & 215-239 Lexington Rd (east side access)
Site Code: 2116000003
Count Date: Dec 14, 2021
Period: 07:00 - 09:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach						South Approach 215-239 Lexington Rd (east side access)						East Approach Lexington Rd						West Approach Lexington Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
08:00					0		2		0	0	0	2	0	154		0	0	154		110	1	0	0	111	267
08:15					0		0		1	0	1	1	3	144		0	0	147		97	0	0	0	97	245
08:30					0		2		0	0	0	2	0	137		0	0	137		89	0	0	0	89	228
08:45					0		1		0	0	8	1	1	134		0	0	135		102	0	0	0	102	238
Grand Total					**0**	**0**	**5**		**1**	**0**	**9**	**6**	**4**	**569**		**0**	**0**	**573**		**398**	**1**	**0**	**0**	**399**	**978**
Approach %						-	83.3		16.7	0		-	0.7	99.3		0		-		99.7	0.3	0		-	
Totals %						0	0.5		0.1	0		0.6	0.4	58.2		0		58.6		40.7	0.1	0		40.8	
PHF						**0**	**0.63**		**0.25**	**0**		**0.75**	**0.33**	**0.92**		**0**		**0.93**		**0.9**	**0.25**	**0**		**0.9**	**0.92**
Cars						0	5		1	0		6	4	557		0		561		383	1	0		384	951
% Cars						0	100		100	0		100	100	97.9		0		97.9		96.2	100	0		96.2	97.2
Trucks						0	0		0	0		0	0	10		0		10		14	0	0		14	24
% Trucks						0	0		0	0		0	0	1.8		0		1.7		3.5	0	0		3.5	2.5
Bicycles						0	0		0	0		0	0	2		0		2		1	0	0		1	3
% Bicycles						0	0		0	0		0	0	0.4		0		0.3		0.3	0	0		0.3	0.3
Peds					0	-					9	-					0	-					0	-	9
% Peds					0	-					100	-					0	-					0	-	

Peak Hour Diagram

Specified Period
From: 16:00:00
To: 18:00:00

One Hour Peak
From: 17:00:00
To: 18:00:00

Intersection: Lexington Rd & 215-239 Lexington Rd (east side access)
Site Code: 2116000003
Count Date: Dec 14, 2021

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Lexington Rd runs E/W

East Approach

	Out	In	Total
Cars	580	813	1393
Trucks	9	9	18
Bicycles	0	2	2
	589	**824**	**1413**

Lexington Rd

Bicycles	Trucks	Cars	Totals	
0	0	0	**0**	
2	9	808	**819**	
0	0	2	**2**	

Peds: 0



Peds: 0

Peds: 5

Lexington Rd

Totals	Cars	Trucks	Bicycles
0	0	0	0
587	578	9	0
2	2	0	0

West Approach

	Out	In	Total
Cars	810	582	1392
Trucks	9	9	18
Bicycles	2	0	2
	821	**591**	**1412**

Totals	4	5	0
Cars	4	5	0
Trucks	0	0	0
Bicycles	0	0	0

215-239 Lexington Rd (east side access)

South Approach

	Out	In	Total
Cars	9	4	13
Trucks	0	0	0
Bicycles	0	0	0
	9	**4**	**13**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
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Peak Hour Summary

Intersection: Lexington Rd & 215-239 Lexington Rd (east side access)
Site Code: 2116000003
Count Date: Dec 14, 2021
Period: 16:00 - 18:00

Peak Hour Data (17:00 - 18:00)

Start Time	North Approach						South Approach 215-239 Lexington Rd (east side access)						East Approach Lexington Rd						West Approach Lexington Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
17:00					0		0	1	0	1	1		1	147		0	0	148		185	0	0	0	185	334
17:15					0		1	1	0	1	2		1	144		0	0	145		198	0	0	0	198	345
17:30					0		2	0	0	2	2		0	158		0	0	158		209	0	0	0	209	369
17:45					0		1	3	0	1	4		0	138		0	0	138		227	2	0	0	229	371
Grand Total					**0**	**0**	**4**	**5**	**0**	**5**	**9**		**2**	**587**		**0**	**0**	**589**		**819**	**2**	**0**	**0**	**821**	**1419**
Approach %						-	44.4	55.6	0		-		0.3	99.7		0		-		99.8	0.2	0		-	
Totals %						0	0.3	0.4	0		0.6		0.1	41.4		0		41.5		57.7	0.1	0		57.9	
PHF						**0**	**0.5**	**0.42**	**0**		**0.56**		**0.5**	**0.93**		**0**		**0.93**		**0.9**	**0.25**	**0**		**0.9**	**0.96**
Cars						0	4	5	0		9		2	578		0		580		808	2	0		810	1399
% Cars						0	100	100	0		100		100	98.5		0		98.5		98.7	100	0		98.7	98.6
Trucks						0	0	0	0		0		0	9		0		9		9	0	0		9	18
% Trucks						0	0	0	0		0		0	1.5		0		1.5		1.1	0	0		1.1	1.3
Bicycles						0	0	0	0		0		0	0		0		0		2	0	0		2	2
% Bicycles						0	0	0	0		0		0	0		0		0		0.2	0	0		0.2	0.1
Peds					0	-				5	-						0	-					0	-	5
% Peds					0	-				100	-						0	-					0	-	

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Traffic Monitoring • Services & Products

Project #21-160 - IBI Group

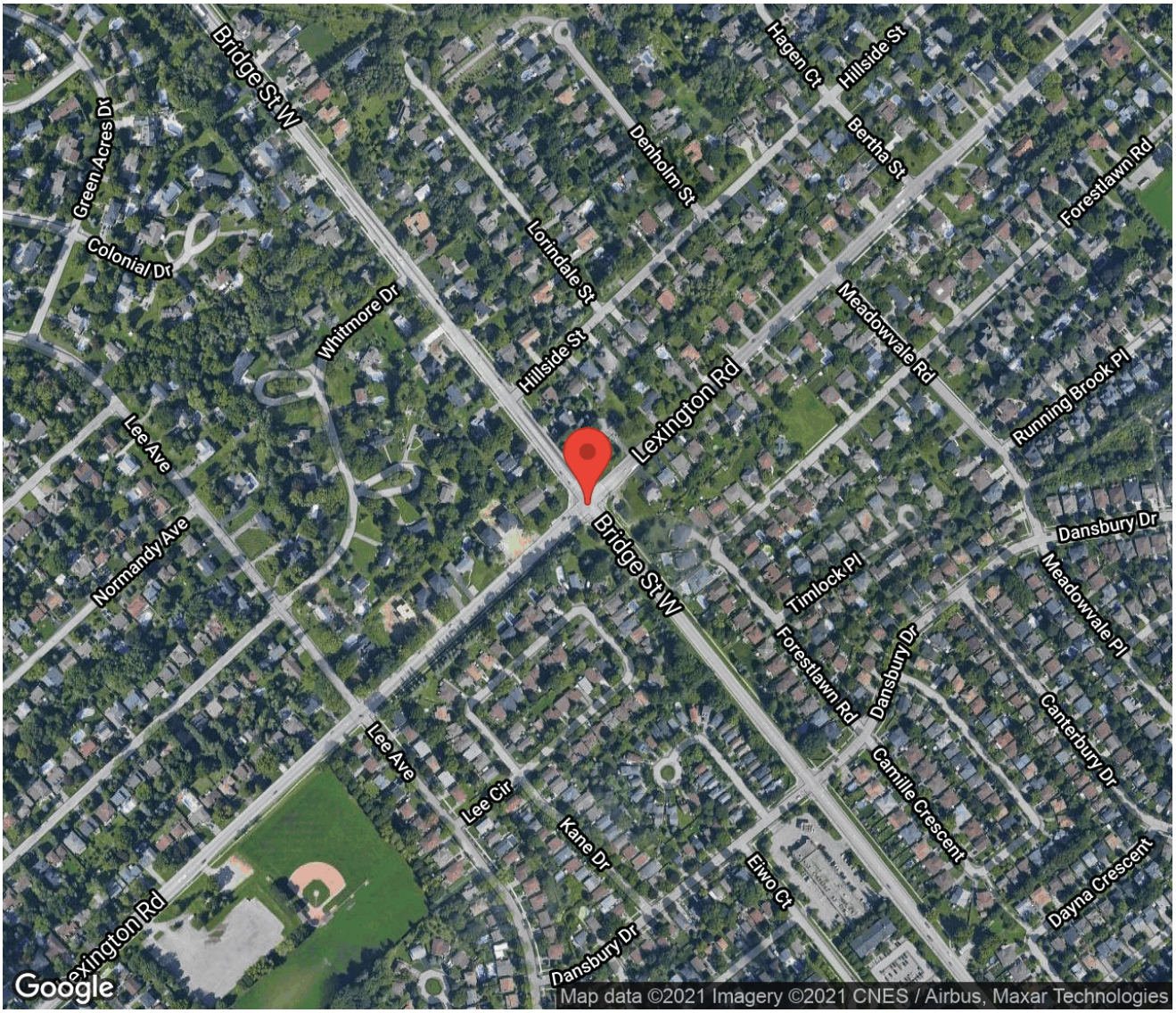
Intersection Count Report

Intersection:	Lexington Rd & Bridge St W
Municipality:	Waterloo
Count Date:	Dec 14, 2021
Site Code:	2116000004
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-09:00, 16:00-18:00
Weather:	Clear

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Traffic Count Map

Intersection:	Lexington Rd & Bridge St W
Site Code:	2116000004
Municipality:	Waterloo
Count Date:	Dec 14, 2021



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Traffic Count Summary

Intersection:	Lexington Rd & Bridge St W
Site Code:	2116000004
Municipality:	Waterloo
Count Date:	Dec 14, 2021

Bridge St W - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	12	92	18	0	122	5	53	40	84	0	177	2	299
08:00 - 09:00	17	157	27	0	201	3	110	94	139	0	343	1	544
BREAK													
16:00 - 17:00	8	151	19	0	178	8	189	207	245	0	641	1	819
17:00 - 18:00	22	130	19	0	171	0	184	207	225	0	616	3	787
GRAND TOTAL	**59**	**530**	**83**	**0**	**672**	**16**	**536**	**548**	**693**	**0**	**1777**	**7**	**2449**

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Traffic Count Summary

Intersection:	Lexington Rd & Bridge St W
Site Code:	2116000004
Municipality:	Waterloo
Count Date:	Dec 14, 2021

Lexington Rd - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	104	186	3	0	293	2	7	270	108	0	385	4	678
08:00 - 09:00	111	269	6	0	386	3	20	332	150	0	502	3	888
BREAK													
16:00 - 17:00	196	352	12	0	560	2	37	417	124	0	578	0	1138
17:00 - 18:00	174	320	15	0	509	1	25	371	128	0	524	2	1033
GRAND TOTAL	**585**	**1127**	**36**	**0**	**1748**	**8**	**89**	**1390**	**510**	**0**	**1989**	**9**	**3737**

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Traffic Count Data

Intersection: Lexington Rd & Bridge St W
Site Code: 2116000004
Municipality: Waterloo
Count Date: Dec 14, 2021

North Approach - Bridge St W

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	1	9	0	0	10	0	0	0	0	0	0	0	0	0	0	0
07:15	2	11	5	0	18	0	0	0	0	0	0	0	0	0	0	2
07:30	5	23	5	0	33	1	2	0	0	3	0	0	0	0	0	1
07:45	3	46	8	0	57	0	1	0	0	1	0	0	0	0	0	2
08:00	5	43	9	0	57	0	2	0	0	2	0	0	0	0	0	2
08:15	2	38	4	0	44	1	2	0	0	3	0	0	0	0	0	0
08:30	3	30	12	0	45	0	3	0	0	3	0	0	0	0	0	0
08:45	6	39	2	0	47	0	0	0	0	0	0	0	0	0	0	1
SUBTOTAL	27	239	45	0	311	2	10	0	0	12	0	0	0	0	0	8

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Traffic Count Data

Intersection: Lexington Rd & Bridge St W
Site Code: 2116000004
Municipality: Waterloo
Count Date: Dec 14, 2021

North Approach - Bridge St W

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	
16:00	2	37	5	0	44	0	0	0	0	0	0	0	0	0	0	0
16:15	2	40	3	0	45	0	1	0	0	1	0	1	0	0	1	3
16:30	2	35	4	0	41	0	1	1	0	2	0	0	0	0	0	2
16:45	2	36	6	0	44	0	0	0	0	0	0	0	0	0	0	3
17:00	12	28	7	0	47	0	1	0	0	1	0	0	0	0	0	0
17:15	1	35	2	0	38	0	0	0	0	0	0	0	0	0	0	0
17:30	4	27	5	0	36	0	0	0	0	0	0	0	0	0	0	0
17:45	5	38	5	0	48	0	0	0	0	0	0	1	0	0	1	0
SUBTOTAL	30	276	37	0	343	0	3	1	0	4	0	2	0	0	2	8
GRAND TOTAL	**57**	**515**	**82**	**0**	**654**	**2**	**13**	**1**	**0**	**16**	**0**	**2**	**0**	**0**	**2**	**16**

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Traffic Count Data

Intersection: Lexington Rd & Bridge St W
Site Code: 2116000004
Municipality: Waterloo
Count Date: Dec 14, 2021

South Approach - Bridge St W

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	4	4	16	0	24	3	0	0	0	3	0	0	0	0	0	0
07:15	8	8	16	0	32	1	2	1	0	4	0	0	0	0	0	0
07:30	12	7	24	0	43	1	4	2	0	7	1	0	0	0	1	2
07:45	21	15	24	0	60	2	0	1	0	3	0	0	0	0	0	0
08:00	44	18	50	0	112	1	0	1	0	2	0	0	0	0	0	0
08:15	24	23	26	0	73	4	4	0	0	8	0	0	0	0	0	0
08:30	18	21	28	0	67	0	3	2	0	5	0	0	0	0	0	1
08:45	18	23	32	0	73	1	1	0	0	2	0	1	0	0	1	0
SUBTOTAL	149	119	216	0	484	13	14	7	0	34	1	1	0	0	2	3

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Traffic Count Data

Intersection: Lexington Rd & Bridge St W
Site Code: 2116000004
Municipality: Waterloo
Count Date: Dec 14, 2021

South Approach - Bridge St W

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	41	52	58	0	151	0	0	1	0	1	0	1	0	0	1	0
16:15	40	56	62	0	158	1	1	1	0	3	0	0	0	0	0	0
16:30	58	42	69	0	169	1	0	1	0	2	0	0	0	0	0	1
16:45	47	54	53	0	154	1	1	0	0	2	0	0	0	0	0	0
17:00	46	45	55	0	146	0	0	0	0	0	0	0	0	0	0	0
17:15	59	57	71	0	187	2	1	1	0	4	0	1	0	0	1	2
17:30	46	47	55	0	148	0	0	0	0	0	0	0	0	0	0	0
17:45	31	55	43	0	129	0	1	0	0	1	0	0	0	0	0	1
SUBTOTAL	368	408	466	0	1242	5	4	4	0	13	0	2	0	0	2	4
GRAND TOTAL	517	527	682	0	1726	18	18	11	0	47	1	3	0	0	4	7

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Traffic Count Data

Intersection: Lexington Rd & Bridge St W
Site Code: 2116000004
Municipality: Waterloo
Count Date: Dec 14, 2021

East Approach - Lexington Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	11	21	0	0	32	0	0	0	0	0	0	0	0	0	0	0
07:15	20	41	0	0	61	2	6	0	0	8	0	0	0	0	0	1
07:30	22	43	0	0	65	2	2	0	0	4	0	0	0	0	0	1
07:45	47	69	3	0	119	0	4	0	0	4	0	0	0	0	0	0
08:00	26	69	2	0	97	0	1	0	0	1	0	0	0	0	0	1
08:15	30	73	0	0	103	0	3	0	0	3	0	0	0	0	0	0
08:30	23	51	1	0	75	3	2	0	0	5	0	0	0	0	0	2
08:45	29	67	3	0	99	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	208	434	9	0	651	7	21	0	0	28	0	0	0	0	0	5

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Traffic Count Data

Intersection: Lexington Rd & Bridge St W
Site Code: 2116000004
Municipality: Waterloo
Count Date: Dec 14, 2021

East Approach - Lexington Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	48	92	4	0	144	0	0	0	0	0	0	1	0	0	1	1
16:15	47	69	3	0	119	0	2	0	0	2	0	0	0	0	0	0
16:30	43	86	3	0	132	0	1	0	0	1	0	0	0	0	0	1
16:45	58	100	2	0	160	0	1	0	0	1	0	0	0	0	0	0
17:00	43	91	5	0	139	1	2	0	0	3	0	0	0	0	0	0
17:15	36	76	2	0	114	0	0	0	0	0	0	0	0	0	0	1
17:30	54	68	4	0	126	0	1	0	0	1	0	0	0	0	0	0
17:45	40	79	3	0	122	0	3	0	0	3	0	0	1	0	1	0
SUBTOTAL	369	661	26	0	1056	1	10	0	0	11	0	1	1	0	2	3
GRAND TOTAL	**577**	**1095**	**35**	**0**	**1707**	**8**	**31**	**0**	**0**	**39**	**0**	**1**	**1**	**0**	**2**	**8**

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Traffic Count Data

Intersection: Lexington Rd & Bridge St W
Site Code: 2116000004
Municipality: Waterloo
Count Date: Dec 14, 2021

West Approach - Lexington Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	1	46	21	0	68	0	1	2	0	3	0	0	0	0	0	0
07:15	2	55	18	0	75	0	1	0	0	1	0	0	0	0	0	1
07:30	1	58	20	0	79	1	6	4	0	11	0	0	0	0	0	1
07:45	2	95	41	0	138	0	8	2	0	10	0	0	0	0	0	2
08:00	3	101	40	0	144	0	3	1	0	4	0	0	0	0	0	1
08:15	4	72	38	0	114	0	3	0	0	3	0	0	0	0	0	0
08:30	7	84	37	0	128	0	4	1	0	5	0	0	0	0	0	0
08:45	6	63	32	0	101	0	2	0	0	2	0	0	1	0	1	2
SUBTOTAL	26	574	247	0	847	1	28	10	0	39	0	0	1	0	1	7

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Traffic Count Data

Intersection: Lexington Rd & Bridge St W
Site Code: 2116000004
Municipality: Waterloo
Count Date: Dec 14, 2021

West Approach - Lexington Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
16:00	5	81	29	0	115	0	2	1	0	3	0	0	0	0	0	0
16:15	7	92	25	0	124	0	3	1	0	4	0	0	1	0	1	0
16:30	9	132	29	0	170	0	1	1	0	2	0	0	0	0	0	0
16:45	16	104	37	0	157	0	2	0	0	2	0	0	0	0	0	0
17:00	8	112	44	0	164	0	0	1	0	1	0	0	0	0	0	0
17:15	6	100	37	0	143	0	5	0	0	5	0	0	0	0	0	0
17:30	5	76	25	0	106	0	1	2	0	3	0	0	0	0	0	2
17:45	6	75	19	0	100	0	2	0	0	2	0	0	0	0	0	0
SUBTOTAL	62	772	245	0	1079	0	16	6	0	22	0	0	1	0	1	2
GRAND TOTAL	**88**	**1346**	**492**	**0**	**1926**	**1**	**44**	**16**	**0**	**61**	**0**	**0**	**2**	**0**	**2**	**9**

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Peak Hour Diagram

Specified Period
From: 07:00:00
To: 09:00:00

One Hour Peak
From: 07:45:00
To: 08:45:00

Intersection: Lexington Rd & Bridge St W
Site Code: 2116000004
Count Date: Dec 14, 2021

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Lexington Rd runs E/W

North Approach

	Out	In	Total
Cars	203	99	302
Trucks	9	7	16
Bicycles	0	0	0
	212	**106**	**318**

Bridge St W

Bicycles	0	0	0	0
Trucks	0	8	1	0
Cars	33	157	13	0
Totals	**33**	**165**	**14**	**0**

East Approach

	Out	In	Total
Cars	394	493	887
Trucks	13	23	36
Bicycles	0	0	0
	407	**516**	**923**

Lexington Rd

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	0	16	**16**
0	18	352	**370**
0	4	156	**160**

Peds: 4
Peds: 3
Peds: 3
Peds: 1



Lexington Rd

Totals	Cars	Trucks	Bicycles
0	0	0	0
6	6	0	0
272	262	10	0
129	126	3	0

West Approach

	Out	In	Total
Cars	524	402	926
Trucks	22	17	39
Bicycles	0	0	0
	546	**419**	**965**

Bridge St W

Totals	**114**	**84**	**132**	**0**
Cars	107	77	128	0
Trucks	7	7	4	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	312	439	751
Trucks	18	15	33
Bicycles	0	0	0
	330	**454**	**784**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
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Peak Hour Summary

Intersection:	Lexington Rd & Bridge St W
Site Code:	2116000004
Count Date:	Dec 14, 2021
Period:	07:00 - 09:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach Bridge St W						South Approach Bridge St W						East Approach Lexington Rd						West Approach Lexington Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
07:45	3	47	8	0	2	58	23	15	25	0	0	63	47	73	3	0	0	123	2	103	43	0	2	148	392
08:00	5	45	9	0	2	59	45	18	51	0	0	114	26	70	2	0	1	98	3	104	41	0	1	148	419
08:15	3	40	4	0	0	47	28	27	26	0	0	81	30	76	0	0	0	106	4	75	38	0	0	117	351
08:30	3	33	12	0	0	48	18	24	30	0	1	72	26	53	1	0	2	80	7	88	38	0	0	133	333
Grand Total	**14**	**165**	**33**	**0**	**4**	**212**	**114**	**84**	**132**	**0**	**1**	**330**	**129**	**272**	**6**	**0**	**3**	**407**	**16**	**370**	**160**	**0**	**3**	**546**	**1495**
Approach %	6.6	77.8	15.6	0		-	34.5	25.5	40	0		-	31.7	66.8	1.5	0		-	2.9	67.8	29.3	0		-	
Totals %	0.9	11	2.2	0		14.2	7.6	5.6	8.8	0		22.1	8.6	18.2	0.4	0		27.2	1.1	24.7	10.7	0		36.5	
PHF	**0.7**	**0.88**	**0.69**	**0**		**0.9**	**0.63**	**0.78**	**0.65**	**0**		**0.72**	**0.69**	**0.89**	**0.5**	**0**		**0.83**	**0.57**	**0.89**	**0.93**	**0**		**0.92**	**0.89**
Cars	13	157	33	0		203	107	77	128	0		312	126	262	6	0		394	16	352	156	0		524	1433
% Cars	92.9	95.2	100	0		95.8	93.9	91.7	97	0		94.5	97.7	96.3	100	0		96.8	100	95.1	97.5	0		96	95.9
Trucks	1	8	0	0		9	7	7	4	0		18	3	10	0	0		13	0	18	4	0		22	62
% Trucks	7.1	4.8	0	0		4.2	6.1	8.3	3	0		5.5	2.3	3.7	0	0		3.2	0	4.9	2.5	0		4	4.1
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					4	-					1	-					3	-					3	-	11
% Peds					36.4	-					9.1	-					27.3	-					27.3	-	

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Peak Hour Diagram

Specified Period		One Hour Peak	
From:	16:00:00	From:	16:30:00
To:	18:00:00	To:	17:30:00

Intersection: Lexington Rd & Bridge St W
Site Code: 2116000004
Count Date: Dec 14, 2021

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Lexington Rd runs E/W

North Approach

	Out	In	Total
Cars	170	249	419
Trucks	3	2	5
Bicycles	0	1	1
	173	**252**	**425**

Bridge St W

Bicycles	0	0	0	0
Trucks	1	2	0	0
Cars	19	134	17	0
Totals	**20**	**136**	**17**	**0**

Peds: 5

East Approach

	Out	In	Total
Cars	545	713	1258
Trucks	5	10	15
Bicycles	0	0	0
	550	**723**	**1273**

Lexington Rd

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	0	39	**39**
0	8	448	**456**
0	2	147	**149**

Peds: 0



Peds: 2

Lexington Rd

Totals	Cars	Trucks	Bicycles
0	0	0	0
12	12	0	0
357	353	4	0
181	180	1	0

Peds: 3

West Approach

	Out	In	Total
Cars	634	582	1216
Trucks	10	9	19
Bicycles	0	0	0
	644	**591**	**1235**

Bridge St W

Totals	**214**	**201**	**250**	**0**
Cars	210	198	248	0
Trucks	4	2	2	0
Bicycles	0	1	0	0

South Approach

	Out	In	Total
Cars	656	461	1117
Trucks	8	5	13
Bicycles	1	0	1
	665	**466**	**1131**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection:	Lexington Rd & Bridge St W
Site Code:	2116000004
Count Date:	Dec 14, 2021
Period:	16:00 - 18:00

Peak Hour Data (16:30 - 17:30)

Start Time	North Approach Bridge St W						South Approach Bridge St W						East Approach Lexington Rd						West Approach Lexington Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:30	2	36	5	0	2	43	59	42	70	0	1	171	43	87	3	0	1	133	9	133	30	0	0	172	519
16:45	2	36	6	0	3	44	48	55	53	0	0	156	58	101	2	0	0	161	16	106	37	0	0	159	520
17:00	12	29	7	0	0	48	46	45	55	0	0	146	44	93	5	0	0	142	8	112	45	0	0	165	501
17:15	1	35	2	0	0	38	61	59	72	0	2	192	36	76	2	0	1	114	6	105	37	0	0	148	492
Grand Total	**17**	**136**	**20**	**0**	**5**	**173**	**214**	**201**	**250**	**0**	**3**	**665**	**181**	**357**	**12**	**0**	**2**	**550**	**39**	**456**	**149**	**0**	**0**	**644**	**2032**
Approach %	9.8	78.6	11.6	0		-	32.2	30.2	37.6	0		-	32.9	64.9	2.2	0		-	6.1	70.8	23.1	0		-	
Totals %	0.8	6.7	1	0		8.5	10.5	9.9	12.3	0		32.7	8.9	17.6	0.6	0		27.1	1.9	22.4	7.3	0		31.7	
PHF	**0.35**	**0.94**	**0.71**	**0**		**0.9**	**0.88**	**0.85**	**0.87**	**0**		**0.87**	**0.78**	**0.88**	**0.6**	**0**		**0.85**	**0.61**	**0.86**	**0.83**	**0**		**0.94**	**0.98**
Cars	17	134	19	0		170	210	198	248	0		656	180	353	12	0		545	39	448	147	0		634	2005
% Cars	100	98.5	95	0		98.3	98.1	98.5	99.2	0		98.6	99.4	98.9	100	0		99.1	100	98.2	98.7	0		98.4	98.7
Trucks	0	2	1	0		3	4	2	2	0		8	1	4	0	0		5	0	8	2	0		10	26
% Trucks	0	1.5	5	0		1.7	1.9	1	0.8	0		1.2	0.6	1.1	0	0		0.9	0	1.8	1.3	0		1.6	1.3
Bicycles	0	0	0	0		0	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	1
% Bicycles	0	0	0	0		0	0	0.5	0	0		0.2	0	0	0	0		0	0	0	0	0		0	0
Peds					5	-					3	-					2	-					0	-	10
% Peds					50	-					30	-					20	-					0	-	

Spectrum

Turning Movement Count
Location Name: COLUMBIA ST & KING ST
Date: Tue, Sep 29, 2020 Deployment Lead: Peter Ilias

Turning Movement Count (63 . COLUMBIA ST & KING ST)

Start Time	N Approach King Street						E Approach Columbia Street						S Approach King Street						W Approach Columbia Street						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:30:00	43	36	31	0	1	110	38	77	9	0	3	124	9	30	10	0	5	49	8	53	34	0	3	95	378	
07:45:00	65	49	50	0	4	164	42	101	3	0	4	146	18	46	3	0	5	67	8	93	44	0	6	145	522	
08:00:00	68	52	50	0	10	170	37	127	12	0	5	176	19	36	13	0	4	68	6	99	44	0	9	149	563	
08:15:00	47	34	36	0	2	117	36	100	8	0	4	144	9	42	9	0	3	60	13	89	27	0	2	129	450	1913
08:30:00	41	40	36	0	1	117	40	94	7	0	3	141	12	44	5	0	8	61	2	94	37	0	6	133	452	1987
08:45:00	47	38	41	0	10	126	27	89	11	0	10	127	11	45	6	0	7	62	9	104	43	0	11	156	471	1936
09:00:00	37	42	26	0	2	105	23	93	9	0	2	125	9	36	11	0	6	56	10	87	30	0	2	127	413	1786
09:15:00	39	55	35	0	5	129	40	79	6	0	2	125	10	32	7	0	7	49	7	85	39	0	13	131	434	1770
09:30:00	47	40	45	0	3	132	39	73	10	0	2	122	11	38	14	0	10	63	4	72	37	0	6	113	430	1748
09:45:00	35	41	30	0	5	106	57	79	14	0	8	150	12	46	12	0	14	70	6	107	28	0	4	141	467	1744
10:00:00	31	52	44	0	3	127	46	86	11	0	4	143	13	54	7	0	10	74	8	92	30	0	12	130	474	1805
10:15:00	40	46	38	0	11	124	59	95	11	0	9	165	13	50	15	0	11	78	8	80	41	0	1	129	496	1867
BREAK																										
12:00:00	42	63	62	0	7	167	50	96	14	0	4	160	20	74	12	0	10	106	12	117	44	0	9	173	606	
12:15:00	60	68	40	0	7	168	47	91	10	0	8	148	16	69	7	0	13	92	16	92	43	0	8	151	559	
12:30:00	54	73	39	0	13	166	52	106	19	0	7	177	12	55	19	0	25	86	11	107	37	0	20	155	584	
12:45:00	57	75	47	0	10	179	48	114	14	0	16	176	21	45	17	0	34	83	17	122	40	0	16	179	617	2366
13:00:00	46	64	51	0	4	161	47	107	12	0	4	166	29	68	18	0	24	115	18	112	43	0	13	173	615	2375
13:15:00	51	75	57	0	3	183	45	106	11	0	6	162	22	74	21	0	21	117	15	120	29	0	16	164	626	2442
13:30:00	48	58	41	0	6	147	53	113	17	0	2	183	21	58	15	0	10	94	9	100	41	0	8	150	574	2432
13:45:00	51	66	53	0	5	170	60	104	15	0	7	179	15	66	11	0	13	92	15	113	39	0	12	167	608	2423
BREAK																										
15:00:00	69	70	48	0	6	187	52	121	12	0	2	185	17	70	10	0	11	97	13	102	43	0	13	158	627	
15:15:00	67	73	49	0	8	189	51	106	11	0	6	168	18	60	20	0	11	98	15	108	47	0	18	170	625	
15:30:00	64	74	50	0	5	188	48	126	4	0	4	178	24	52	11	0	17	87	13	124	58	0	13	195	648	
15:45:00	64	69	53	0	9	186	46	125	11	0	1	182	9	57	20	0	14	86	15	140	49	0	6	204	658	2558
16:00:00	56	72	33	0	12	161	61	135	17	0	3	213	4	69	7	0	32	80	17	144	47	0	24	208	662	2593
16:15:00	64	75	42	0	8	181	48	140	15	0	6	203	15	66	12	0	11	93	19	138	45	0	18	202	679	2647
16:30:00	63	78	45	0	8	186	63	117	16	0	5	196	8	71	14	0	16	93	11	138	65	0	23	214	689	2688
16:45:00	71	64	47	0	10	182	42	118	13	0	7	173	1	66	17	0	15	84	14	139	63	0	22	216	655	2685
17:00:00	55	83	50	0	11	188	54	126	16	0	17	196	20	66	26	0	13	112	14	127	55	0	15	196	692	2715
17:15:00	88	94	51	0	12	233	42	150	10	0	7	202	16	67	17	0	16	100	10	129	61	0	11	200	735	2771
17:30:00	74	83	46	0	7	203	36	162	14	0	9	212	14	59	30	0	29	103	8	121	44	0	9	173	691	2773
17:45:00	67	83	39	0	4	189	44	124	14	0	7	182	17	58	24	0	27	99	17	100	51	0	10	168	638	2756
Grand Total	1751	1985	1405	0	212	5141	1473	3480	376	0	184	5329	465	1770	440	0	452	2674	368	3448	1378	0	359	5194	**18338**	-
Approach%	34.1%	38.6%	27.3%	0%		-	27.6%	65.3%	7.1%	0%		-	17.4%	66.2%	16.5%	0%		-	7.1%	66.4%	26.5%	0%		-	-	-
Totals %	9.5%	10.8%	7.7%	0%		28%	8%	19%	2.1%	0%		29.1%	2.5%	9.7%	2.4%	0%		14.6%	2%	18.8%	7.5%	0%		28.3%	-	-
Heavy	74	90	39	0		-	50	86	0	0		-	9	79	7	0		-	10	89	70	0		-	-	-
Heavy %	4.2%	4.5%	2.8%	0%		-	3.4%	2.5%	0%	0%		-	1.9%	4.5%	1.6%	0%		-	2.7%	2.6%	5.1%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

Spectrum

Turning Movement Count
Location Name: COLUMBIA ST & KING ST
Date: Tue, Sep 29, 2020 Deployment Lead: Peter Ilias

Peak Hour: 07:45 AM - 08:45 AM Weather:

Start Time	N Approach King Street						E Approach Columbia Street						S Approach King Street						W Approach Columbia Street						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	65	49	50	0	4	164	42	101	3	0	4	146	18	46	3	0	5	67	8	93	44	0	6	145	522
08:00:00	68	52	50	0	10	170	37	127	12	0	5	176	19	36	13	0	4	68	6	99	44	0	9	149	563
08:15:00	47	34	36	0	2	117	36	100	8	0	4	144	9	42	9	0	3	60	13	89	27	0	2	129	450
08:30:00	41	40	36	0	1	117	40	94	7	0	3	141	12	44	5	0	8	61	2	94	37	0	6	133	452
Grand Total	221	175	172	0	17	568	155	422	30	0	16	607	58	168	30	0	20	256	29	375	152	0	23	556	**1987**
Approach%	38.9%	30.8%	30.3%	0%		-	25.5%	69.5%	4.9%	0%		-	22.7%	65.6%	11.7%	0%		-	5.2%	67.4%	27.3%	0%		-	**-**
Totals %	11.1%	8.8%	8.7%	0%		28.6%	7.8%	21.2%	1.5%	0%		30.5%	2.9%	8.5%	1.5%	0%		12.9%	1.5%	18.9%	7.6%	0%		28%	**-**
PHF	0.81	0.84	0.86	0		0.84	0.92	0.83	0.63	0		0.86	0.76	0.91	0.58	0		0.94	0.56	0.95	0.86	0		0.93	**-**
Heavy	15	13	10	0		38	9	18	0	0		27	1	8	2	0		11	4	17	11	0		32	**-**
Heavy %	6.8%	7.4%	5.8%	0%		6.7%	5.8%	4.3%	0%	0%		4.4%	1.7%	4.8%	6.7%	0%		4.3%	13.8%	4.5%	7.2%	0%		5.8%	**-**
Cars & Light Goods	206	162	160	0		528	146	404	30	0		580	57	160	28	0		245	24	356	140	0		520	**-**
Cars & Light Goods %	93.2%	92.6%	93%	0%		93%	94.2%	95.7%	100%	0%		95.6%	98.3%	95.2%	93.3%	0%		95.7%	82.8%	94.9%	92.1%	0%		93.5%	**-**
Motorcycles	0	0	1	0		1	0	0	0	0		0	0	0	0	0		0	0	0	1	0		1	**-**
Motorcycles %	0%	0%	0.6%	0%		0.2%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0.7%	0%		0.2%	**-**
Single-Unit Trucks	4	4	5	0		13	2	7	0	0		9	1	4	2	0		7	1	2	4	0		7	**-**
Single-Unit Trucks %	1.8%	2.3%	2.9%	0%		2.3%	1.3%	1.7%	0%	0%		1.5%	1.7%	2.4%	6.7%	0%		2.7%	3.4%	0.5%	2.6%	0%		1.3%	**-**
Buses	9	7	3	0		19	5	10	0	0		15	0	4	0	0		4	3	14	5	0		22	**-**
Buses %	4.1%	4%	1.7%	0%		3.3%	3.2%	2.4%	0%	0%		2.5%	0%	2.4%	0%	0%		1.6%	10.3%	3.7%	3.3%	0%		4%	**-**
Articulated Trucks	2	2	2	0		6	2	1	0	0		3	0	0	0	0		0	0	1	2	0		3	**-**
Articulated Trucks %	0.9%	1.1%	1.2%	0%		1.1%	1.3%	0.2%	0%	0%		0.5%	0%	0%	0%	0%		0%	0%	0.3%	1.3%	0%		0.5%	**-**
Bicycles on Road	0	0	1	0		1	0	0	0	0		0	0	0	0	0		0	1	2	0	0		3	**-**
Bicycles on Road %	0%	0%	0.6%	0%		0.2%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	3.4%	0.5%	0%	0%		0.5%	**-**
Pedestrians	-	-	-	-	17	-	-	-	-	-	16	-	-	-	-	-	19	-	-	-	-	-	21	-	**-**
Pedestrians%	-	-	-	-	22.4%		-	-	-	-	21.1%		-	-	-	-	25%		-	-	-	-	27.6%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	2	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	1.3%		-	-	-	-	2.6%		**-**

Spectrum

Turning Movement Count
Location Name: COLUMBIA ST & KING ST
Date: Tue, Sep 29, 2020 Deployment Lead: Peter Ilias

Peak Hour: 12:30 PM - 01:30 PM Weather:

Start Time	N Approach King Street						E Approach Columbia Street						S Approach King Street						W Approach Columbia Street						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
12:30:00	54	73	39	0	13	166	52	106	19	0	7	177	12	55	19	0	25	86	11	107	37	0	20	155	584
12:45:00	57	75	47	0	10	179	48	114	14	0	16	176	21	45	17	0	34	83	17	122	40	0	16	179	617
13:00:00	46	64	51	0	4	161	47	107	12	0	4	166	29	68	18	0	24	115	18	112	43	0	13	173	615
13:15:00	51	75	57	0	3	183	45	106	11	0	6	162	22	74	21	0	21	117	15	120	29	0	16	164	626
Grand Total	208	287	194	0	30	689	192	433	56	0	33	681	84	243	75	0	104	401	61	461	149	0	65	671	**2442**
Approach%	30.2%	41.7%	28.2%	0%		-	28.2%	63.6%	8.2%	0%		-	20.9%	60.6%	18.7%	0%		-	9.1%	68.7%	22.2%	0%		-	**-**
Totals %	8.5%	11.8%	7.9%	0%		28.2%	7.9%	17.7%	2.3%	0%		27.9%	3.4%	10%	3.1%	0%		16.4%	2.5%	18.9%	6.1%	0%		27.5%	**-**
PHF	0.91	0.96	0.85	0		0.94	0.92	0.95	0.74	0		0.96	0.72	0.82	0.89	0		0.86	0.85	0.94	0.87	0		0.94	**-**
Heavy	9	17	6	0		32	14	14	0	0		28	1	6	1	0		8	3	10	5	0		18	**-**
Heavy %	4.3%	5.9%	3.1%	0%		4.6%	7.3%	3.2%	0%	0%		4.1%	1.2%	2.5%	1.3%	0%		2%	4.9%	2.2%	3.4%	0%		2.7%	**-**
Cars & Light Goods	197	268	187	0		652	176	418	56	0		650	78	234	74	0		386	57	448	144	0		649	**-**
Cars & Light Goods %	94.7%	93.4%	96.4%	0%		94.6%	91.7%	96.5%	100%	0%		95.4%	92.9%	96.3%	98.7%	0%		96.3%	93.4%	97.2%	96.6%	0%		96.7%	**-**
Motorcycles	2	0	1	0		3	1	1	0	0		2	3	2	0	0		5	0	3	0	0		3	**-**
Motorcycles %	1%	0%	0.5%	0%		0.4%	0.5%	0.2%	0%	0%		0.3%	3.6%	0.8%	0%	0%		1.2%	0%	0.7%	0%	0%		0.4%	**-**
Single-Unit Trucks	4	7	6	0		17	11	8	0	0		19	1	1	1	0		3	3	4	2	0		9	**-**
Single-Unit Trucks %	1.9%	2.4%	3.1%	0%		2.5%	5.7%	1.8%	0%	0%		2.8%	1.2%	0.4%	1.3%	0%		0.7%	4.9%	0.9%	1.3%	0%		1.3%	**-**
Buses	4	7	0	0		11	1	6	0	0		7	0	4	0	0		4	0	6	3	0		9	**-**
Buses %	1.9%	2.4%	0%	0%		1.6%	0.5%	1.4%	0%	0%		1%	0%	1.6%	0%	0%		1%	0%	1.3%	2%	0%		1.3%	**-**
Articulated Trucks	1	3	0	0		4	2	0	0	0		2	0	1	0	0		1	0	0	0	0		0	**-**
Articulated Trucks %	0.5%	1%	0%	0%		0.6%	1%	0%	0%	0%		0.3%	0%	0.4%	0%	0%		0.2%	0%	0%	0%	0%		0%	**-**
Bicycles on Road	0	2	0	0		2	1	0	0	0		1	2	0	0	0		2	1	0	0	0		1	**-**
Bicycles on Road %	0%	0.7%	0%	0%		0.3%	0.5%	0%	0%	0%		0.1%	2.4%	0%	0%	0%		0.5%	1.6%	0%	0%	0%		0.1%	**-**
Pedestrians	-	-	-	-	29	-	-	-	-	-	31	-	-	-	-	-	101	-	-	-	-	-	64	-	**-**
Pedestrians%	-	-	-	-	12.4%		-	-	-	-	13.3%		-	-	-	-	43.3%		-	-	-	-	27.5%		**-**
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	1	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0.4%		-	-	-	-	0.9%		-	-	-	-	1.3%		-	-	-	-	0.4%		**-**

Spectrum

Turning Movement Count
Location Name: COLUMBIA ST & KING ST
Date: Tue, Sep 29, 2020 Deployment Lead: Peter Ilias

Peak Hour: 04:45 PM - 05:45 PM Weather:

Start Time	N Approach King Street						E Approach Columbia Street						S Approach King Street						W Approach Columbia Street						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:45:00	71	64	47	0	10	182	42	118	13	0	7	173	1	66	17	0	15	84	14	139	63	0	22	216	655
17:00:00	55	83	50	0	11	188	54	126	16	0	17	196	20	66	26	0	13	112	14	127	55	0	15	196	692
17:15:00	88	94	51	0	12	233	42	150	10	0	7	202	16	67	17	0	16	100	10	129	61	0	11	200	735
17:30:00	74	83	46	0	7	203	36	162	14	0	9	212	14	59	30	0	29	103	8	121	44	0	9	173	691
Grand Total	288	324	194	0	40	806	174	556	53	0	40	783	51	258	90	0	73	399	46	516	223	0	57	785	**2773**
Approach%	35.7%	40.2%	24.1%	0%		-	22.2%	71%	6.8%	0%		-	12.8%	64.7%	22.6%	0%		-	5.9%	65.7%	28.4%	0%		-	-
Totals %	10.4%	11.7%	7%	0%		29.1%	6.3%	20.1%	1.9%	0%		28.2%	1.8%	9.3%	3.2%	0%		14.4%	1.7%	18.6%	8%	0%		28.3%	-
PHF	0.82	0.86	0.95	0		0.86	0.81	0.86	0.83	0		0.92	0.64	0.96	0.75	0		0.89	0.82	0.93	0.88	0		0.91	-
Heavy	5	7	4	0		16	1	4	0	0		5	0	9	1	0		10	1	4	7	0		12	-
Heavy %	1.7%	2.2%	2.1%	0%		2%	0.6%	0.7%	0%	0%		0.6%	0%	3.5%	1.1%	0%		2.5%	2.2%	0.8%	3.1%	0%		1.5%	-
Cars & Light Goods	280	316	190	0		786	173	551	53	0		777	51	249	89	0		389	45	510	216	0		771	-
Cars & Light Goods %	97.2%	97.5%	97.9%	0%		97.5%	99.4%	99.1%	100%	0%		99.2%	100%	96.5%	98.9%	0%		97.5%	97.8%	98.8%	96.9%	0%		98.2%	-
Motorcycles	1	1	0	0		2	0	1	0	0		1	0	0	0	0		0	0	0	0	0		0	-
Motorcycles %	0.3%	0.3%	0%	0%		0.2%	0%	0.2%	0%	0%		0.1%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Single-Unit Trucks	1	0	4	0		5	1	1	0	0		2	0	1	1	0		2	1	2	2	0		5	-
Single-Unit Trucks %	0.3%	0%	2.1%	0%		0.6%	0.6%	0.2%	0%	0%		0.3%	0%	0.4%	1.1%	0%		0.5%	2.2%	0.4%	0.9%	0%		0.6%	-
Buses	4	7	0	0		11	0	3	0	0		3	0	8	0	0		8	0	2	4	0		6	-
Buses %	1.4%	2.2%	0%	0%		1.4%	0%	0.5%	0%	0%		0.4%	0%	3.1%	0%	0%		2%	0%	0.4%	1.8%	0%		0.8%	-
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	1	0		1	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0.4%	0%		0.1%	-
Bicycles on Road	2	0	0	0		2	0	0	0	0		0	0	0	0	0		0	0	2	0	0		2	-
Bicycles on Road %	0.7%	0%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.3%	-
Pedestrians	-	-	-	-	32	-	-	-	-	-	36	-	-	-	-	-	72	-	-	-	-	-	55	-	-
Pedestrians%	-	-	-	-	15.2%		-	-	-	-	17.1%		-	-	-	-	34.3%		-	-	-	-	26.2%		-
Bicycles on Crosswalk	-	-	-	-	8	-	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	2	-	-
Bicycles on Crosswalk%	-	-	-	-	3.8%		-	-	-	-	1.9%		-	-	-	-	0.5%		-	-	-	-	1%		-

Spectrum

Turning Movement Count
Location Name: COLUMBIA ST & KING ST
Date: Tue, Sep 29, 2020 Deployment Lead: Peter Ilias

Peak Hour: 07:45 AM - 08:45 AM Weather:

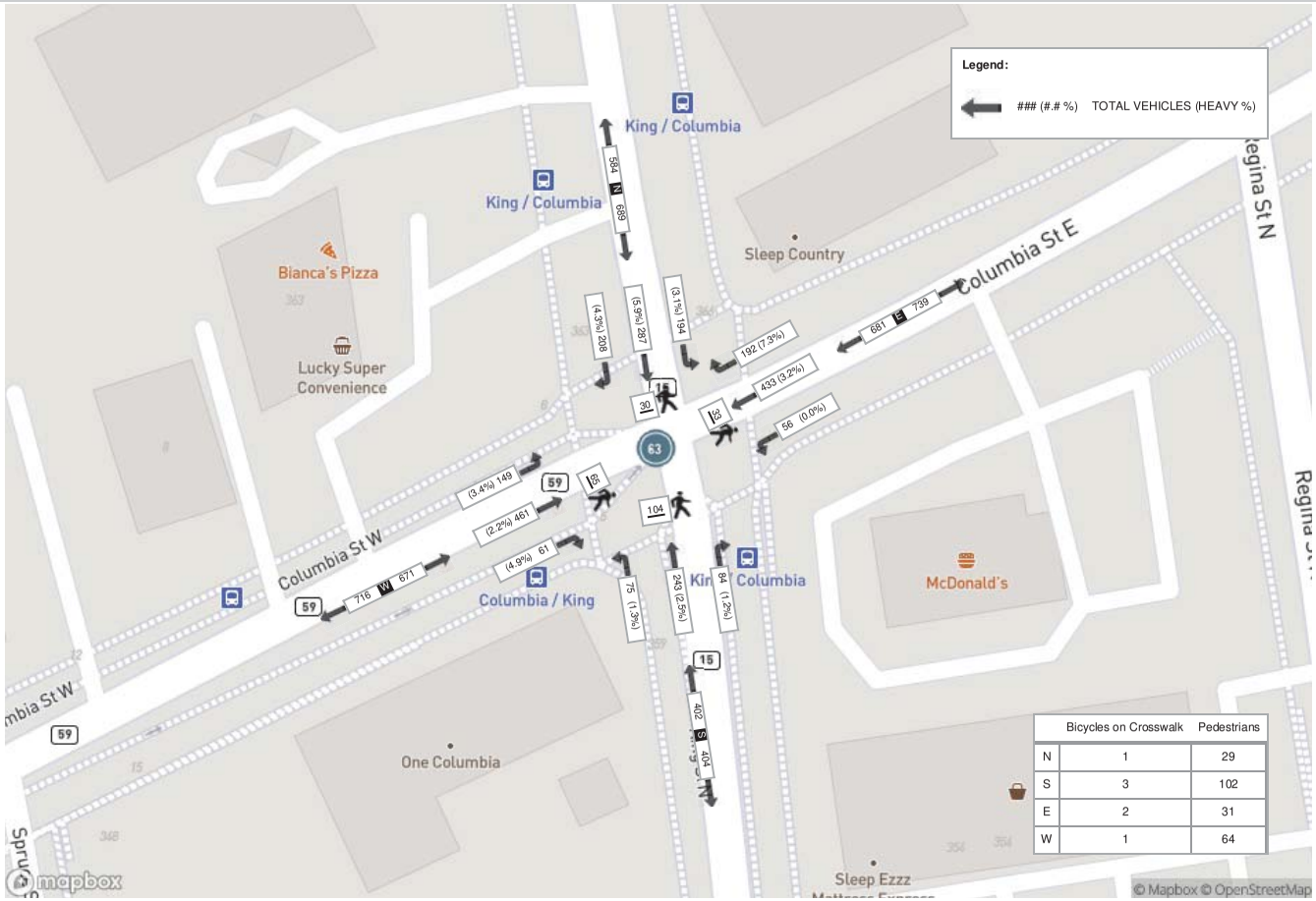


	Bicycles on Crosswalk	Pedestrians
N	0	17
S	1	19
E	0	16
W	2	21

Spectrum

Turning Movement Count
Location Name: COLUMBIA ST & KING ST
Date: Tue, Sep 29, 2020 Deployment Lead: Peter Ilias

Peak Hour: 12:30 PM - 01:30 PM Weather:

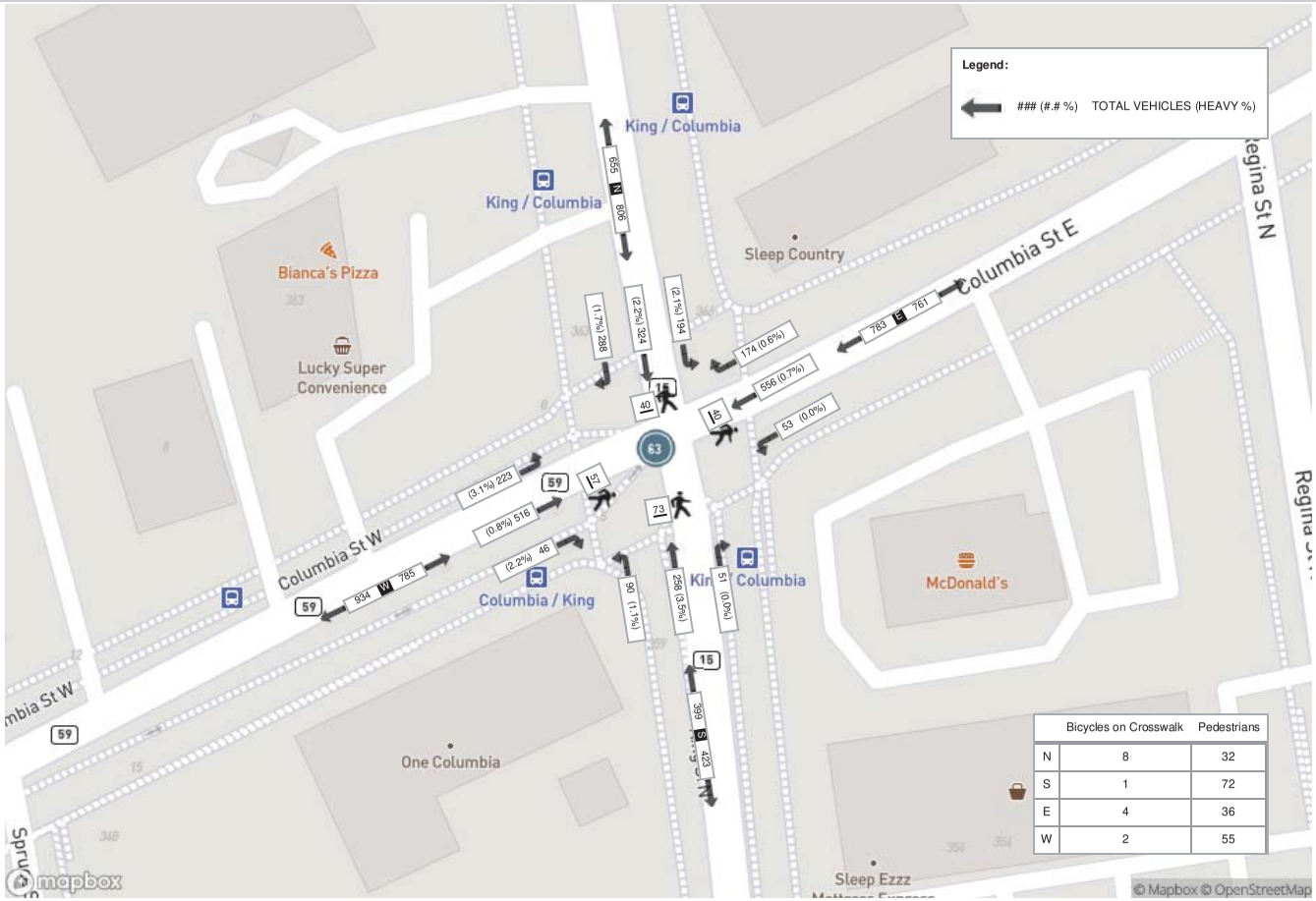


	Bicycles on Crosswalk	Pedestrians
N	1	29
S	3	102
E	2	31
W	1	64

Spectrum

Turning Movement Count
Location Name: COLUMBIA ST & KING ST
Date: Tue, Sep 29, 2020 Deployment Lead: Peter Ilias

Peak Hour: 04:45 PM - 05:45 PM Weather:



	Bicycles on Crosswalk	Pedestrians
N	8	32
S	1	72
E	4	36
W	2	55

Turning Movement Count (185 . KING ST N & COLUMBIA ST W)

Start Time	N Approach King Street						E Approach Columbia Street						S Approach King Street						W Approach Columbia Street						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:30:00	46	10	48	0	0	77	92	82	5	0	5	445	6	12	5	0	7	50	9	55	15	0	41	441	357	
07:12:00	47	16	41	0	0	80	90	416	40	0	2	476	6	18	40	0	8	57	8	432	29	0	6	462	294	
08:00:00	94	53	98	0	4	449	46	450	42	0	49	461	44	23	93	0	47	87	41	493	13	0	21	480	273	
08:42:00	92	52	97	0	0	447	40	459	44	0	40	483	49	29	90	0	47	81	48	406	20	0	47	477	254	9099
08:30:00	92	59	47	0	0	401	47	480	40	0	43	907	6	29	46	0	44	80	45	451	29	0	90	939	593	9978
08:12:00	97	51	49	0	0	403	44	455	7	0	40	481	8	28	41	0	5	80	40	439	22	0	44	467	251	9394
06:00:00	46	24	44	0	0	84	41	411	40	0	49	458	6	24	42	0	44	72	44	444	20	0	94	479	165	9911
06:42:00	95	74	48	0	4	442	47	419	40	0	6	456	40	19	93	0	90	72	40	449	36	0	46	454	290	9903
06:30:00	30	28	42	0	0	403	42	491	43	0	6	429	47	37	49	0	40	55	7	493	19	0	99	479	163	9073
06:12:00	90	59	41	0	0	65	99	446	43	0	44	421	44	37	40	0	45	28	49	403	17	0	47	459	170	4676
40:00:00	42	26	41	0	0	88	46	67	45	0	8	439	41	21	8	0	7	75	44	89	18	0	8	414	137	4690
40:42:00	42	24	91	0	0	60	90	81	44	0	8	442	6	34	7	0	42	17	49	61	20	0	1	425	108	4808
BREAK																										
49:00:00	97	56	90	0	0	445	95	408	49	0	90	415	46	70	45	0	74	402	39	427	59	0	90	924	548	
49:42:00	97	81	48	0	0	496	48	408	49	0	18	438	90	12	42	0	19	80	6	437	51	0	99	940	227	
49:30:00	32	78	47	0	0	430	93	400	90	0	99	413	90	74	48	0	34	406	46	402	72	0	94	466	284	
49:12:00	98	58	94	0	0	447	94	494	91	0	48	455	46	80	41	0	31	443	42	490	23	0	34	488	281	9310
43:00:00	91	88	48	0	0	430	91	448	92	0	94	457	99	62	98	0	32	412	46	415	26	0	91	991	555	9388
43:42:00	41	77	90	0	0	444	42	404	92	0	5	414	93	52	47	0	91	402	90	400	28	0	46	478	232	9355
43:30:00	31	80	40	0	0	491	8	60	49	0	48	440	42	54	46	0	30	62	99	442	21	0	48	464	290	9302
43:12:00	30	79	47	0	0	446	91	88	46	0	48	434	48	75	44	0	46	402	45	403	18	0	98	457	299	9913
BREAK																										
42:00:00	96	56	41	0	9	449	42	403	40	0	49	498	47	55	44	0	98	61	96	420	56	4	99	916	283	
42:42:00	11	81	45	0	0	411	42	61	93	0	91	439	40	28	40	0	33	78	43	414	54	0	14	942	256	
42:30:00	38	84	95	0	0	412	47	443	41	0	43	411	41	53	43	0	99	60	42	414	71	0	98	930	506	
42:12:00	32	85	47	0	0	438	94	430	90	0	5	474	47	71	42	0	91	405	93	900	51	0	40	987	709	9153
45:00:00	34	74	30	0	0	439	44	434	41	0	47	425	48	71	41	0	91	405	45	901	56	0	49	986	583	9253
45:42:00	96	439	31	0	0	462	8	435	42	0	42	426	32	57	42	0	98	447	45	944	55	0	44	963	751	9728
45:30:00	96	490	38	0	0	487	41	413	47	0	93	471	32	85	90	0	96	414	99	473	74	0	96	955	758	9647
45:12:00	31	447	39	0	0	483	5	413	95	0	45	472	17	78	90	0	99	412	93	480	50	0	48	953	755	9684
47:00:00	31	441	31	0	0	489	44	423	95	0	7	460	39	54	46	0	49	449	46	481	53	0	98	955	720	3018
47:42:00	32	433	12	0	4	943	40	477	92	0	46	949	38	87	48	0	94	413	42	476	29	0	33	915	841	3068
47:30:00	14	493	33	0	4	467	45	431	35	0	34	485	47	64	35	0	19	411	94	900	70	0	23	964	848	3418
47:12:00	92	441	95	0	0	452	43	436	42	0	47	457	41	82	99	0	35	494	32	908	75	0	11	346	779	3421
Grand Total	889	9222	568	0	5	1432	292	1019	299	0	181	2086	278	9043	248	0	729	3406	230	1208	4819	4	798	5884	**19214**	-
Approach%	94.3%	54.8%	45.6%	0%		-	40.3%	76.1%	40.3%	0%		-	48.5%	51.7%	45.7%	0%		-	7.7%	52.2%	95.8%	0%		-	-	-
Totals %	1.5%	43.3%	3.5%	0%		94.2%	9.7%	94%	9.7%	0%		95.2%	3%	40.2%	9.7%	0%		45.9%	9.8%	93.2%	6.5%	0%		32.8%	-	-
Heavy	51	75	7	0		-	43	65	7	0		-	8	56	39	0		-	49	446	82	0		-	-	-
Heavy %	7.3%	3%	4%	0%		-	9.2%	9.1%	4.3%	0%		-	4.1%	3.1%	5.9%	0%		-	9.3%	9.5%	1.5%	0%		-	-	-
Bicycles	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-
Bicycle %	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-	-	-		-	-	-

Spectrum

Turning Movement Count
Location Name: KING ST N & COLUMBIA ST W
Date: Thu, Apr 01, 9046 Deployment Lead: Peter Das

Peak Hour: 08:00 AM - 09:00 AM Weather:

Start Time	N Approach King Street						E Approach Columbia Street						S Approach King Street						W Approach Columbia Street						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:00:00	94	53	98	0	4	449	46	450	42	0	49	461	44	23	93	0	47	87	41	493	13	0	21	480	273
08:42:00	92	52	97	0	0	447	40	459	44	0	40	483	49	29	90	0	47	81	48	406	20	0	47	477	254
08:30:00	92	59	47	0	0	401	47	480	40	0	43	907	6	29	46	0	44	80	45	451	29	0	90	939	593
08:12:00	97	51	49	0	0	403	44	455	7	0	40	481	8	28	41	0	5	80	40	439	22	0	44	467	251
Grand Total	68	921	81	0	4	135	27	558	13	0	12	758	10	942	75	0	24	334	28	298	900	0	409	785	**2321**
Approach%	99.2%	28.3%	46.3%	0%		-	7.1%	87%	2.5%	0%		-	49.4%	52%	93%	0%		-	7.1%	57.9%	92.1%	0%		-	**-**
Totals %	1.9%	40.6%	3.5%	0%		48.8%	9.2%	98.8%	4.6%	0%		33.4%	4.7%	6.3%	3.3%	0%		41.3%	9.2%	99.7%	8.5%	0%		33.6%	**-**
PHF	0.64	0.68	0.72	0		0.63	0.72	0.63	0.79	0		0.63	0.83	0.63	0.83	0		0.62	0.84	0.8	0.64	0		0.82	**-**
Heavy	8	41	9	0		91	4	47	0	0		48	0	44	6	0		90	0	47	49	0		96	**-**
Heavy %	8.9%	2.2%	9.1%	0%		2.2%	4.8%	9.2%	0%	0%		9.3%	0%	2.4%	44.8%	0%		5%	0%	3.9%	5%	0%		3.7%	**-**
Cars & Light Goods	60	910	89	0		149	22	520	13	0		718	10	901	57	0		344	28	244	488	0		727	**-**
Cars & Light Goods %	64.8%	61.2%	67.5%	0%		61.2%	65.2%	67.3%	400%	0%		67.1%	400%	61.6%	88.9%	0%		61%	400%	65.8%	61%	0%		65.3%	**-**
Motorcycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Motorcycles %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Single-Unit Trucks	4	2	4	0		7	4	5	0	0		7	0	3	4	0		1	0	1	9	0		5	**-**
Single-Unit Trucks %	4%	9%	4.9%	0%		4.5%	4.8%	0.6%	0%	0%		0.6%	0%	4.1%	4.3%	0%		4.9%	0%	0.8%	4%	0%		0.8%	**-**
Buses	5	7	4	0		41	0	40	0	0		40	0	8	8	0		45	0	43	8	0		94	**-**
Buses %	5.4%	9.8%	4.9%	0%		3.9%	0%	4.2%	0%	0%		4.3%	0%	3.7%	40.2%	0%		1.8%	0%	9.2%	1%	0%		9.7%	**-**
Articulated Trucks	4	9	0	0		3	0	4	0	0		4	0	0	0	0		0	0	0	9	0		9	**-**
Articulated Trucks %	4%	0.8%	0%	0%		0.7%	0%	0.4%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0%	4%	0%		0.3%	**-**
Bicycles on Road	0	0	0	0		0	4	4	0	0		9	0	0	0	0		0	0	0	0	0		0	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	4.8%	0.4%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	11	-	-	-	-	-	24	-	-	-	-	-	404	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	99.4%		-	-	-	-	92.5%		-	-	-	-	20.8%		**-**
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	4	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0.2%		-	-	-	-	0.2%		-	-	-	-	0%		-	-	-	-	0.2%		**-**

Spectrum

Turning Movement Count
Location Name: KING ST N & COLUMBIA ST W
Date: Thu, Apr 01, 9046 Deployment Lead: Peter Das

Peak Hour: 12:15 PM - 01:15 PM Weather:

Start Time	N Approach King Street						E Approach Columbia Street						S Approach King Street						W Approach Columbia Street						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
49:42:00	97	81	48	0	0	496	48	408	49	0	18	438	90	12	42	0	19	80	6	437	51	0	99	940	227
49:30:00	32	78	47	0	0	430	93	400	90	0	99	413	90	74	48	0	34	406	46	402	72	0	94	466	284
49:12:00	98	58	94	0	0	447	94	494	91	0	48	455	46	80	41	0	31	443	42	490	23	0	34	488	281
43:00:00	91	88	48	0	0	430	91	448	92	0	94	457	99	62	98	0	32	412	46	415	26	0	91	991	555
Grand Total	441	348	71	0	0	205	85	117	84	0	406	541	84	964	72	0	419	117	59	208	924	0	68	894	**2388**
Approach%	99.2%	59.8%	41.5%	0%		-	41%	79.8%	43.9%	0%		-	48.4%	52.4%	45.8%	0%		-	7.5%	54.6%	30.5%	0%		-	**-**
Totals %	1.8%	43.3%	3.4%	0%		94.9%	3.5%	48.7%	3.1%	0%		92.7%	3.1%	49.9%	3.4%	0%		48.7%	9.5%	94.3%	40.2%	0%		31.1%	**-**
PHF	0.84	0.6	0.88	0		0.67	0.6	0.69	0.84	0		0.69	0.69	0.77	0.57	0		0.77	0.89	0.87	0.81	0		0.69	**-**
Heavy	8	6	9	0		46	9	44	3	0		45	0	7	2	0		49	9	45	6	0		97	**-**
Heavy %	7%	9.8%	9.7%	0%		3.8%	9.3%	9.2%	3.7%	0%		9.5%	0%	9.1%	5.7%	0%		9.7%	3.9%	3.4%	3.5%	0%		3.3%	**-**
Cars & Light Goods	405	306	74	0		185	83	132	78	0		265	80	981	70	0		131	50	160	919	0		769	**-**
Cars & Light Goods %	63%	67.9%	62.6%	0%		65%	65.2%	67.3%	65.3%	0%		67.4%	68.8%	67.5%	63.3%	0%		67.4%	65.8%	65.2%	65.1%	0%		65.2%	**-**
Motorcycles	0	0	4	0		4	4	0	0	0		4	4	0	0	0		4	0	4	0	0		4	**-**
Motorcycles %	0%	0%	4.1%	0%		0.9%	4.9%	0%	0%	0%		0.9%	4.9%	0%	0%	0%		0.9%	0%	0.9%	0%	0%		0.4%	**-**
Single-Unit Trucks	3	3	0	0		5	9	7	9	0		44	0	4	9	0		3	9	2	3	0		40	**-**
Single-Unit Trucks %	9.5%	0.6%	0%	0%		4.9%	9.3%	4.5%	9.2%	0%		4.8%	0%	0.3%	9.7%	0%		0.7%	3.9%	4%	4.9%	0%		4.9%	**-**
Buses	2	2	9	0		49	0	1	0	0		1	0	2	3	0		8	0	44	1	0		42	**-**
Buses %	1.1%	4.5%	9.7%	0%		9.1%	0%	0.6%	0%	0%		0.7%	0%	4.7%	1%	0%		4.8%	0%	9.9%	4.5%	0%		4.8%	**-**
Articulated Trucks	0	4	0	0		4	0	0	4	0		4	0	4	0	0		4	0	0	9	0		9	**-**
Articulated Trucks %	0%	0.3%	0%	0%		0.9%	0%	0%	4.9%	0%		0.9%	0%	0.3%	0%	0%		0.9%	0%	0%	0.8%	0%		0.9%	**-**
Bicycles on Road	0	0	0	0		0	0	4	0	0		4	0	0	0	0		0	0	4	0	0		4	**-**
Bicycles on Road %	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.9%	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.4%	**-**
Pedestrians	-	-	-	-	0	-	-	-	-	-	408	-	-	-	-	-	419	-	-	-	-	-	68	-	**-**
Pedestrians%	-	-	-	-	0%		-	-	-	-	30.6%		-	-	-	-	10.7%		-	-	-	-	98.4%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	4	-	-	-	-	-	0	-	-	-	-	-	0	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	0.3%		-	-	-	-	0%		-	-	-	-	0%		**-**

Spectrum

Turning Movement Count
Location Name: KING ST N & COLUMBIA ST W
Date: Thu, Apr 01, 9046 Deployment Lead: Peter Das

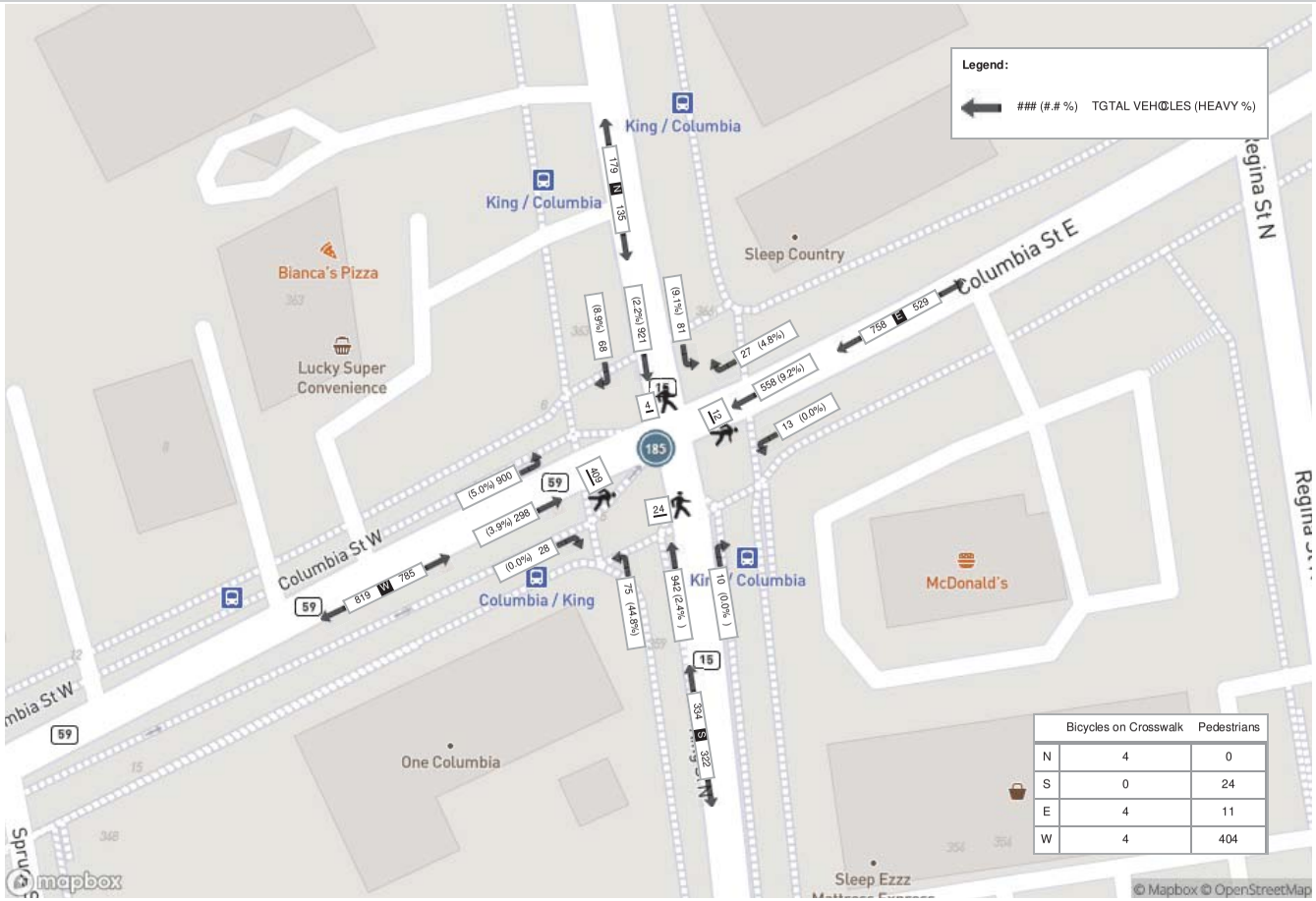
Peak Hour: 05:00 PM - 06:00 PM Weather:

Start Time	N Approach King Street						E Approach Columbia Street						S Approach King Street						W Approach Columbia Street						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
47:00:00	31	441	31	0	0	489	44	423	95	0	7	460	39	54	46	0	49	449	46	481	53	0	98	955	720
47:42:00	32	433	12	0	4	943	40	477	92	0	46	949	38	87	48	0	94	413	42	476	29	0	33	915	841
47:30:00	14	493	33	0	4	467	45	431	35	0	34	485	47	64	35	0	19	411	94	900	70	0	23	964	848
47:12:00	92	441	95	0	0	452	43	436	42	0	47	457	41	82	99	0	35	494	32	908	75	0	11	346	779
Grand Total	432	181	438	0	9	727	20	503	409	0	71	722	404	391	62	0	444	290	60	774	954	0	428	4499	**3154**
Approach%	47.8%	53.6%	48.9%	0%		-	5.5%	76.6%	43.2%	0%		-	46.1%	59.3%	48.3%	0%		-	8%	58.7%	93.3%	0%		-	**-**
Totals %	1.3%	42.3%	1.1%	0%		91%	4.5%	46.4%	3.9%	0%		93.6%	3.9%	40.3%	3%	0%		45.2%	9.6%	91.1%	8.3%	0%		32.5%	**-**
PHF	0.89	0.64	0.77	0		0.86	0.78	0.82	0.74	0		0.86	0.55	0.86	0.55	0		0.6	0.51	0.63	0.85	0		0.88	**-**
Heavy	5	40	0	0		45	0	8	0	0		8	0	2	9	0		7	0	40	8	0		48	**-**
Heavy %	1.1%	9.4%	0%	0%		9.4%	0%	4.3%	0%	0%		4.4%	0%	4.2%	9.4%	0%		4.3%	0%	4.3%	3.4%	0%		4.5%	**-**
Cars & Light Goods	496	171	437	0		710	20	261	404	0		712	404	346	63	0		243	60	750	923	0		4403	**-**
Cars & Light Goods %	62.5%	67.6%	66.3%	0%		67.8%	400%	68.2%	66%	0%		68.7%	400%	68.2%	67.6%	0%		68.7%	400%	68.5%	65.6%	0%		68.3%	**-**
Motorcycles	0	0	0	0		0	0	0	4	0		4	0	0	0	0		0	0	0	0	0		0	**-**
Motorcycles %	0%	0%	0%	0%		0%	0%	0%	4%	0%		0.4%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Single-Unit Trucks	3	4	0	0		1	0	0	0	0		0	0	4	0	0		4	0	3	4	0		1	**-**
Single-Unit Trucks %	9.9%	0.9%	0%	0%		0.2%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.9%	0%	0.1%	0.1%	0%		0.1%	**-**
Buses	3	7	0	0		40	0	8	0	0		8	0	1	9	0		5	0	7	7	0		41	**-**
Buses %	9.9%	4.1%	0%	0%		4.3%	0%	4.3%	0%	0%		4.4%	0%	4.9%	9.4%	0%		4.9%	0%	0.6%	9.7%	0%		4.9%	**-**
Articulated Trucks	0	9	0	0		9	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	**-**
Articulated Trucks %	0%	0.1%	0%	0%		0.3%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	**-**
Bicycles on Road	0	0	4	0		4	0	4	0	0		4	0	0	0	0		0	0	4	0	0		4	**-**
Bicycles on Road %	0%	0%	0.7%	0%		0.4%	0%	0.9%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	0.4%	0%	0%		0.4%	**-**
Pedestrians	-	-	-	-	9	-	-	-	-	-	56	-	-	-	-	-	440	-	-	-	-	-	425	-	**-**
Pedestrians%	-	-	-	-	0.5%		-	-	-	-	90%		-	-	-	-	34.6%		-	-	-	-	12.9%		**-**
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	4	-	-	-	-	-	9	-	**-**
Bicycles on Crosswalk%	-	-	-	-	0%		-	-	-	-	4.1%		-	-	-	-	0.3%		-	-	-	-	0.5%		**-**

Spectrum

Turning Movement Count
Location Name: KING ST N & COLUMBIA ST W
Date: Thu, Apr 01, 9046 Deployment Lead: Peter Das

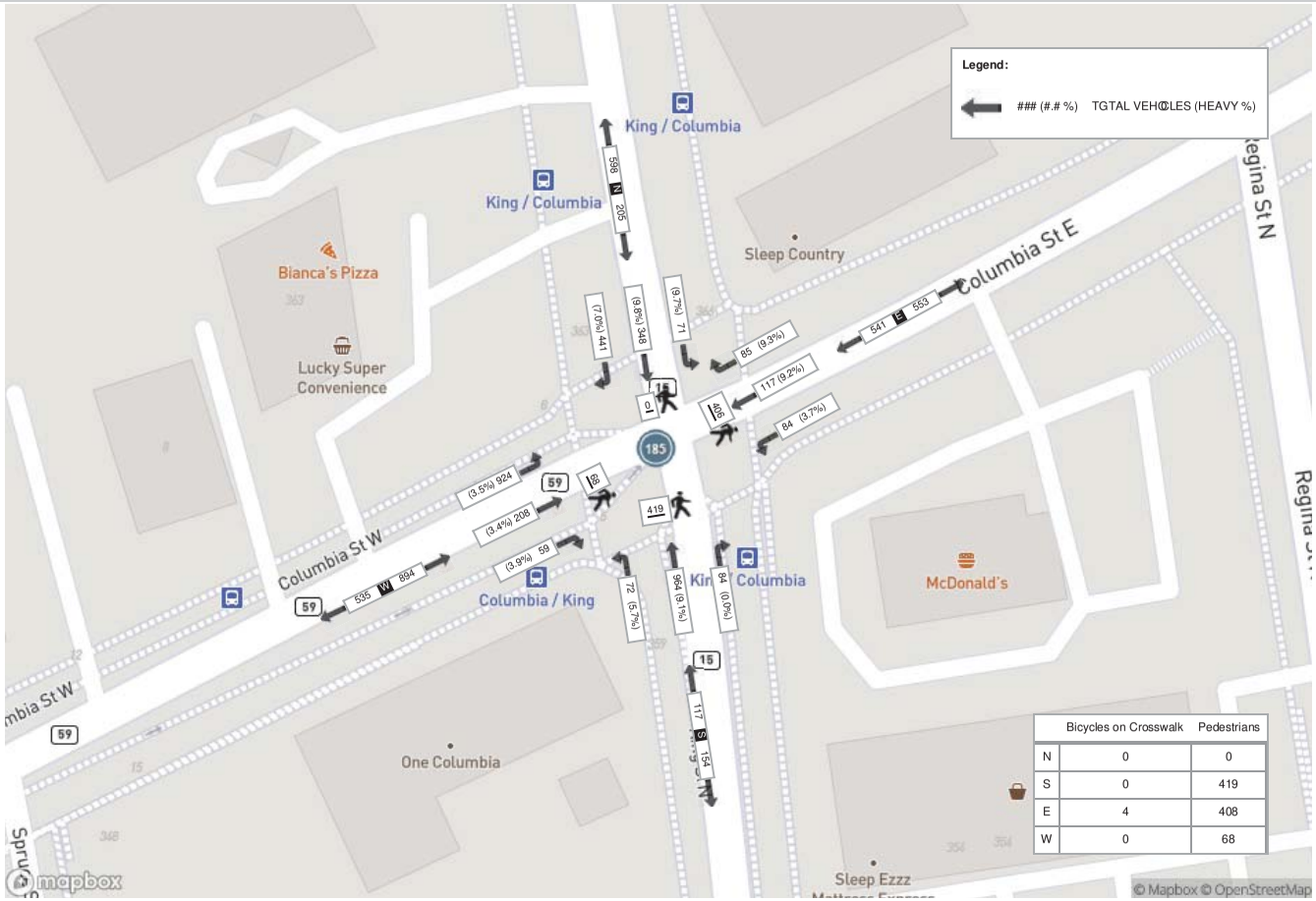
Peak Hour: 08:00 AM - 09:00 AM Weather:



Spectrum

Turning Movement Count
Location Name: KING ST N & COLUMBIA ST W
Date: Thu, Apr 01, 9046 Deployment Lead: Peter Das

Peak Hour: 12:15 PM - 01:15 PM Weather:

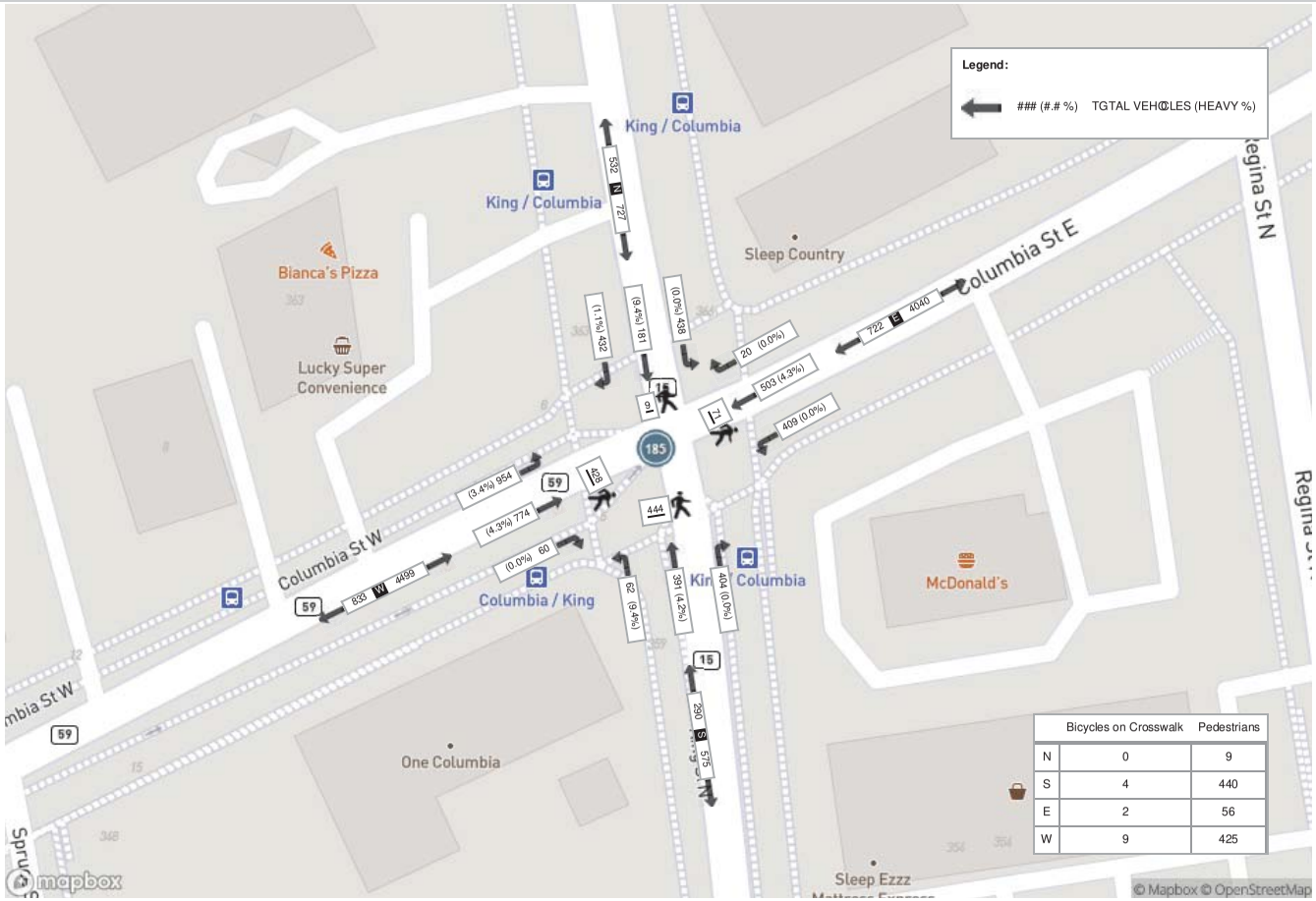


	Bicycles on Crosswalk	Pedestrians
N	0	0
S	0	419
E	4	408
W	0	68

Spectrum

Turning Movement Count
Location Name: KING ST N & COLUMBIA ST W
Date: Thu, Apr 01, 9046 Deployment Lead: Peter Das

Peak Hour: 05:00 PM - 06:00 PM Weather:



	Bicycles on Crosswalk	Pedestrians
N	0	9
S	4	440
E	2	56
W	9	425

Columbia St West and King Street North

Movement	AM		PM	
	2019	2020	2019	2020
NBL	76	30	95	90
NBT	215	168	324	258
NBR	40	58	101	51
EBL	200	151	261	223
EBT	528	373	770	514
EBR	58	28	90	46
SBL	84	170	137	194
SBT	254	175	484	323
SBR	98	221	135	285
WBL	43	30	101	53
WBT	667	422	602	555
WBR	56	155	50	174
Total	2319	1981	3150	2766
COVID-19 TMC adjustment factor	1.2		1.1	

Appendix C

Signal Timing Plan

Region of Waterloo

CURRENT TRAFFIC SIGNAL TIMING

INT # 26 | WEBER STREET @ Columbia Street | T08-50/ 15W

Date Prepared: December 15, 2021

Mode of Control: Pre-timed running FIXED TIME

Left Info

Actuated	NB	LT	-	WEBER STREET
Actuated	SB	LT	-	WEBER STREET
Actuated	EB	LT	-	COLUMBIA STREET
Actuated	WB	LT	-	COLUMBIA STREET

*Offsets are a percentage of the cycle length and refers to the beginning of Main Street green

Pattern 1 07:00-10:30 Mon to Fri

WEBER STREET								OFFSET		91%
SBL	Green Arrow	in	5.0	seconds	NBL	Green Arrow		Min	5.0	seconds
		xt	3.0	seconds				Ext	3.0	seconds
		ax	11.0	seconds				Max	11.0	seconds
SBL	Amber Arrow		3.0	seconds	NBL	Amber Arrow			3.0	seconds
All Red			1.0	seconds	All Red				1.0	seconds
Green			28.0	seconds						
Amber			4.0	seconds	Walk	10.0	seconds			
All Red			2.0	seconds	FDW	18.0	seconds			
Columbia Street										
EBL	Green Arrow	in	5.0	seconds	WBL	Green Arrow		Min	5.0	seconds
		xt	3.0	seconds				Ext	3.0	seconds
		ax	7.0	seconds				Max	17.0	seconds
EBL	Amber Arrow		3.0	seconds	WBL	Amber Arrow			3.0	seconds
All Red			1.0	seconds	All Red				1.0	seconds
Green			24.0	seconds						
Amber			4.0	seconds	Walk	10.0	seconds			
All Red			2.0	seconds	FDW	14.0	seconds			
TOTAL			100.0	seconds						

Min=Minimum Time
Ext=Extension Time
Max=Maximum Time

This signal timing cannot be presented as evidence in a court of law.

Pattern 2 10:30-14:30, 19:00-22:00 Mon to Fri, 08:30-22:00 Sat, 10:00-20:00 Sun

WEBER STREET								OFFSET		14%
SBL	Green Arrow	in	5.0	seconds	NBL	Green Arrow		Min	5.0	seconds
		xt	3.0	seconds				Ext	3.0	seconds
		ax	8.0	seconds				Max	12.0	seconds
SBL	Amber Arrow		3.0	seconds	NBL	Amber Arrow			3.0	seconds
All Red			1.0	seconds	All Red				1.0	seconds
Green			28.0	seconds						
Amber			4.0	seconds	Walk	10.0	seconds			
All Red			2.0	seconds	FDW	18.0	seconds			

Columbia Street										
EBL	Green Arrow	in	5.0	seconds	WBL	Green Arrow		Min	5.0	seconds
		xt	3.0	seconds				Ext	3.0	seconds
		ax	10.0	seconds				Max	12.0	seconds
EBL	Amber Arrow		3.0	seconds	WBL	Amber Arrow			3.0	seconds
All Red			1.0	seconds	All Red				1.0	seconds
Green			28.0	seconds						
Amber			4.0	seconds	Walk	14.0	seconds			
All Red			2.0	seconds	FDW	14.0	seconds			
TOTAL			100.0	seconds						

Pattern 3 14:30-19:00 Mon to Fri

WEBER STREET								OFFSET		13%
SBL	Green Arrow	in	5.0	seconds	NBL	Green Arrow		Min	5.0	seconds
		xt	3.0	seconds				Ext	3.0	seconds
		ax	14.7	seconds				Max	10.3	seconds
SBL	Amber Arrow		3.0	seconds	NBL	Amber Arrow			3.0	seconds
All Red			1.0	seconds	All Red				1.0	seconds
Green			31.4	seconds						
Amber			4.0	seconds	Walk	13.4	seconds			
All Red			2.0	seconds	FDW	18.0	seconds			

Columbia Street										
EBL	Green Arrow	in	5.0	seconds	WBL	Green Arrow		Min	5.0	seconds
		xt	3.0	seconds				Ext	3.0	seconds
		ax	8.1	seconds				Max	11.4	seconds
EBL	Amber Arrow		3.0	seconds	WBL	Amber Arrow			3.0	seconds
All Red			1.0	seconds	All Red				1.0	seconds
Green			32.5	seconds						
Amber			4.0	seconds	Walk	18.5	seconds			
All Red			2.0	seconds	FDW	14.0	seconds			
TOTAL			110.0	seconds						

Min=Minimum Time
Ext=Extension Time
Max=Maximum Time

This signal timing cannot be presented as evidence in a court of law.

Pattern 4	All other times						
WEBER STREET						OFFSET	19%
Green	38.0	seconds					
Amber	4.0	seconds	Walk	20.0	seconds		
All Red	2.0	seconds	FDW	18.0	seconds		
Columbia Street							
Green	30.0	seconds					
Amber	4.0	seconds	Walk	16.0	seconds		
All Red	2.0	seconds	FDW	14.0	seconds		
TOTAL	80.0	seconds					

Min=Minimum Time
Ext=Extension Time
Max=Maximum Time

This signal timing cannot be presented as evidence in a court of law.

Region of Waterloo

CURRENT TRAFFIC SIGNAL TIMING

INT # **341** | **Bridge Street @ Lexington Road** | T08-50/ **64W**

Date Prepared: **December 15, 2021**

Mode of Control **Fixed Time**

Left Info **Actuated** **NB** LT - **Bridge Street**
Actuated **EB** LT - **Lexington Road**

*Offsets are a percentage of the cycle length and refers to the beginning of Main Street green

Pattern 1 7:00-7:30 & 9:00-10:00 Monday-Friday

Bridge Street							OFFSET	0%
NBL Green Arrow	Min	5.0	seconds					
	Ext	3.0	seconds					
	Max	10.0	seconds					
NBL Amber Arrow		3.0	seconds					
All Red		1.0	seconds					
Green		48.0	seconds					
Amber		4.0	seconds	Walk	33.0	seconds		
All Red		2.0	seconds	FDW	15.0	seconds		
Lexington Road								
Green		26.0	seconds					
Amber		4.0	seconds	Walk	15.0	seconds		
All Red		2.0	seconds	FDW	11.0	seconds		
TOTAL		100.0	seconds					

Pattern 5 7:30-9:00 Monday-Friday

Bridge Street							OFFSET	0%
NBL Green Arrow	Min	5.0	seconds					
	Ext	3.0	seconds					
	Max	8.0	seconds					
NBL Amber Arrow		3.0	seconds					
All Red		1.0	seconds					
Green		40.0	seconds					
Amber		4.0	seconds	Walk	25.0	seconds		
All Red		2.0	seconds	FDW	15.0	seconds		
Lexington Road								
EBL Green Arrow	Min	5.0	seconds					
	Ext	3.0	seconds					
	Max	6.0	seconds					
EBL Amber Arrow		3.0	seconds					
All Red		1.0	seconds					
Green		26.0	seconds					
Amber		4.0	seconds	Walk	15.0	seconds		
All Red		2.0	seconds	FDW	11.0	seconds		
TOTAL		100.0	seconds					

Min=Minimum Time
Ext=Extension Time
Max=Maximum Time

This signal timing cannot be presented as evidence in a court of law.

Pattern 2 10:00-15:00 Mon-Fri, 8:30-19:00 Sat, 11:00-18:00 Sun

Bridge Street OFFSET 49%

NBL Green Arrow	Min	5.0	seconds				
	Ext	3.0	seconds				
	Max	6.4	seconds				
NBL Amber Arrow		3.0	seconds				
All Red		1.0	seconds				
Green		25.2	seconds				
Amber		4.0	seconds	Walk	10.2	seconds	
All Red		2.0	seconds	FDW	15.0	seconds	

Lexington Road

EBL Green Arrow	Min	5.0	seconds				
	Ext	3.0	seconds				
	Max	6.4	seconds				
EBL Amber Arrow		3.0	seconds				
All Red		1.0	seconds				
Green		22.0	seconds				
Amber		4.0	seconds	Walk	11.0	seconds	
All Red		2.0	seconds	FDW	11.0	seconds	
TOTAL		80.0	seconds				

Pattern 3 15:00-19:00 Monday-Friday

Bridge Street OFFSET 0%

NBL Green Arrow	Min	5.0	seconds				
	Ext	3.0	seconds				
	Max	11.0	seconds				
NBL Amber Arrow		3.0	seconds				
All Red		1.0	seconds				
Green		42.0	seconds				
Amber		4.0	seconds	Walk	27.0	seconds	
All Red		2.0	seconds	FDW	15.0	seconds	

Lexington Road

EBL Green Arrow	Min	5.0	seconds				
	Ext	3.0	seconds				
	Max	6.0	seconds				
EBL Amber Arrow		3.0	seconds				
All Red		1.0	seconds				
Green		21.0	seconds				
Amber		4.0	seconds	Walk	10.0	seconds	
All Red		2.0	seconds	FDW	11.0	seconds	
TOTAL		100.0	seconds				

Min=Minimum Time
Ext=Extension Time
Max=Maximum Time

This signal timing cannot be presented as evidence in a court of law.

Pattern 4	All other times						
Bridge Street						OFFSET	65%
Green	27.0	seconds					
Amber	4.0	seconds	Walk	12.0	seconds		
All Red	2.0	seconds	FDW	15.0	seconds		
Lexington Road							
Green	21.0	seconds					
Amber	4.0	seconds	Walk	10.0	seconds		
All Red	2.0	seconds	FDW	11.0	seconds		
TOTAL	60.0	seconds					

Min=Minimum Time
Ext=Extension Time
Max=Maximum Time

This signal timing cannot be presented as evidence in a court of law.

Region of Waterloo

CURRENT TRAFFIC SIGNAL TIMING

INT # **345** **LEXINGTON ROAD @ Davenport Road** T08-50/ **64W**

Date Prepared: **December 15, 2021**

Mode of Control **Fixed Time**

Left Info **Actuated** **EB** LT - **LEXINGTON ROAD**

*Offsets are a percentage of the cycle length and refers to the beginning of Main Street green

Pattern 1 7:00-9:00 Monday-Friday

LEXINGTON ROAD							OFFSET	0%
EBL Green Arrow	Min	5.0	seconds					
	Ext	3.0	seconds					
	Max	9.5	seconds					
EBL Amber Arrow		3.0	seconds					
All Red		1.0	seconds					
Green		40.8	seconds					
Amber		4.0	seconds	Walk	28.8	seconds		
All Red		2.0	seconds	FDW	12.0	seconds		
Davenport Road								
Green		23.7	seconds					
Amber		4.0	seconds	Walk	11.7	seconds		
All Red		2.0	seconds	FDW	12.0	seconds		
TOTAL		90.0	seconds					

Pattern 2 9-15 & 19-22 Mon-Fri, 7:000-22:00 Sat, 11:00-18:00 Sun

LEXINGTON ROAD							OFFSET	0%
EBL Green Arrow	Min	5.0	seconds					
	Ext	3.0	seconds					
	Max	6.4	seconds					
EBL Amber Arrow		3.0	seconds					
All Red		1.0	seconds					
Green		30.0	seconds					
Amber		4.0	seconds	Walk	18.0	seconds		
All Red		2.0	seconds	FDW	12.0	seconds		
Davenport Road								
Green		27.6	seconds					
Amber		4.0	seconds	Walk	15.6	seconds		
All Red		2.0	seconds	FDW	12.0	seconds		
TOTAL		80.0	seconds					

Min=Minimum Time
Ext=Extension Time
Max=Maximum Time

This signal timing cannot be presented as evidence in a court of law.

Pattern 3 15:00-19:00 Monday-Friday

LEXINGTON ROAD							OFFSET	0%
EBL Green Arrow	Min	5.0	seconds					
	Ext	3.0	seconds					
	Max	12.0	seconds					
EBL Amber Arrow		3.0	seconds					
All Red		1.0	seconds					
Green		26.0	seconds					
Amber		4.0	seconds	Walk	14.0	seconds		
All Red		2.0	seconds	FDW	12.0	seconds		
Davenport Road								
Green		26.0	seconds					
Amber		4.0	seconds	Walk	14.0	seconds		
All Red		2.0	seconds	FDW	12.0	seconds		
TOTAL		80.0	seconds					

Pattern 4 All other times

LEXINGTON ROAD							OFFSET	0%
Green		29.8	seconds					
Amber		4.0	seconds	Walk	17.8	seconds		
All Red		2.0	seconds	FDW	12.0	seconds		
Davenport Road								
Green		23.3	seconds					
Amber		4.0	seconds	Walk	11.3	seconds		
All Red		2.0	seconds	FDW	12.0	seconds		
TOTAL		65.0	seconds					

Min=Minimum Time
Ext=Extension Time
Max=Maximum Time

This signal timing cannot be presented as evidence in a court of law.

Appendix D

2022 Existing Conditions Synchro Reports



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	476	1	5	680	6	1
Future Volume (Veh/h)	476	1	5	680	6	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	476	1	5	680	6	1
Pedestrians					9	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	65					
pX, platoon unblocked			0.85		0.85	0.85
vC, conflicting volume			486		1176	486
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			306		1118	306
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		97	100
cM capacity (veh/h)			1067		194	623

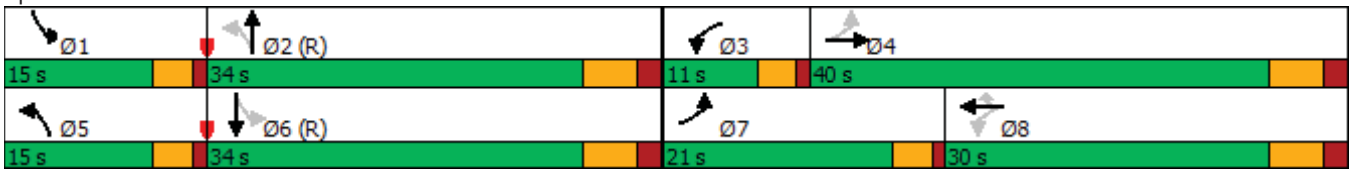
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	477	5	680	7
Volume Left	0	5	0	6
Volume Right	1	0	0	1
cSH	1700	1067	1700	215
Volume to Capacity	0.28	0.00	0.40	0.03
Queue Length 95th (m)	0.0	0.1	0.0	0.8
Control Delay (s)	0.0	8.4	0.0	22.3
Lane LOS		A		C
Approach Delay (s)	0.0	0.1		22.3
Approach LOS				C

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	86	335	186	439	156	192	318	163	300
Future Volume (vph)	86	335	186	439	156	192	318	163	300
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	9.0	30.0	9.0	30.0	30.0	9.5	34.0	9.0	34.0
Total Split (s)	21.0	40.0	11.0	30.0	30.0	15.0	34.0	15.0	34.0
Total Split (%)	21.0%	40.0%	11.0%	30.0%	30.0%	15.0%	34.0%	15.0%	34.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	1.0	2.0	1.0	2.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	-2.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max	Max	None	C-Max	None	C-Max
Act Effct Green (s)	44.2	36.0	42.4	36.8	34.8	43.7	31.0	43.1	30.7
Actuated g/C Ratio	0.44	0.36	0.42	0.37	0.35	0.44	0.31	0.43	0.31
v/c Ratio	0.11	0.39	0.25	0.63	0.22	0.25	0.38	0.21	0.30
Control Delay	15.3	18.3	17.6	32.2	4.5	18.1	25.1	17.6	26.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.3	18.3	17.6	32.2	4.5	18.1	25.1	17.6	26.7
LOS	B	B	B	C	A	B	C	B	C
Approach Delay		17.9		23.2			22.9		23.7
Approach LOS		B		C			C		C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 91 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 21.9	Intersection LOS: C
Intersection Capacity Utilization 77.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 26: Weber Street North & Columbia Street East





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	86	535	186	439	156	192	428	163	330
v/c Ratio	0.11	0.39	0.25	0.63	0.22	0.25	0.38	0.21	0.30
Control Delay	15.3	18.3	17.6	32.2	4.5	18.1	25.1	17.6	26.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.3	18.3	17.6	32.2	4.5	18.1	25.1	17.6	26.7
Queue Length 50th (m)	9.0	29.1	20.6	71.2	0.0	22.3	30.2	18.6	24.9
Queue Length 95th (m)	17.5	42.8	34.3	108.9	12.3	36.8	43.6	31.5	36.4
Internal Link Dist (m)		167.0		721.2			592.4		184.3
Turn Bay Length (m)	40.0		100.0			75.0		65.0	
Base Capacity (vph)	834	1365	752	699	715	787	1134	781	1095
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.39	0.25	0.63	0.22	0.24	0.38	0.21	0.30

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	335	200	186	439	156	192	318	110	163	300	30
Future Volume (vph)	86	335	200	186	439	156	192	318	110	163	300	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	3550		1775	1900	1750	1775	3550		1775	3550	
Flt Permitted	0.27	1.00		0.35	1.00	1.00	0.48	1.00		0.40	1.00	
Satd. Flow (perm)	1775	3550		1775	1900	1750	1775	3550		1775	3550	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	86	335	200	186	439	156	192	318	110	163	300	30
RTOR Reduction (vph)	0	87	0	0	0	102	0	34	0	0	8	0
Lane Group Flow (vph)	86	448	0	186	439	54	192	394	0	163	322	0
Confl. Peds. (#/hr)	5		7	7		5	5		4	4		5
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	3%	2%	2%	3%	5%	1%	3%	4%	3%	6%	0%
Bus Blockages (#/hr)	0	2	0	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	41.8	34.8		41.8	34.8	34.8	38.5	28.2		37.9	27.9	
Effective Green, g (s)	41.8	36.8		41.8	36.8	34.8	38.5	30.2		37.9	29.9	
Actuated g/C Ratio	0.42	0.37		0.42	0.37	0.35	0.38	0.30		0.38	0.30	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	812	1306		812	699	609	683	1072		672	1061	
v/s Ratio Prot	0.01	0.13		c0.02	c0.23		c0.03	c0.11		0.02	0.09	
v/s Ratio Perm	0.04			0.09		0.03	0.08			0.07		
v/c Ratio	0.11	0.34		0.23	0.63	0.09	0.28	0.37		0.24	0.30	
Uniform Delay, d1	19.2	22.9		19.2	26.0	21.9	21.3	27.4		21.4	27.0	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.7		0.1	4.2	0.3	0.2	1.0		0.2	0.7	
Delay (s)	19.2	23.6		19.4	30.2	22.2	21.5	28.4		21.6	27.8	
Level of Service	B	C		B	C	C	C	C		C	C	
Approach Delay (s)		23.0			26.0			26.2			25.7	
Approach LOS		C			C			C			C	

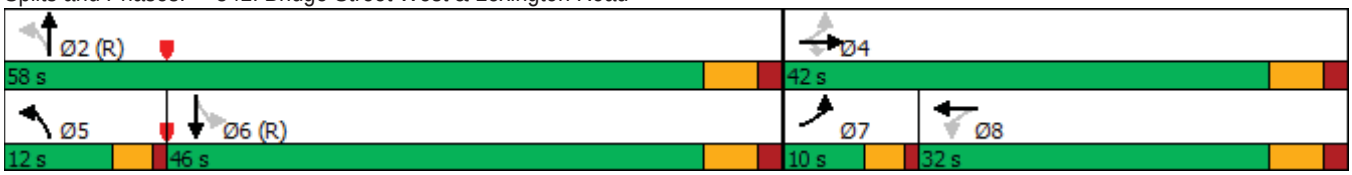
Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	19	444	192	155	326	137	101	17	198
Future Volume (vph)	19	444	192	155	326	137	101	17	198
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4			8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	4	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	5.0	8.0	8.0	8.0
Minimum Split (s)	9.0	32.0	32.0	32.0	32.0	9.0	46.0	46.0	46.0
Total Split (s)	10.0	42.0	42.0	32.0	32.0	12.0	58.0	46.0	46.0
Total Split (%)	10.0%	42.0%	42.0%	32.0%	32.0%	12.0%	58.0%	46.0%	46.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes		Yes	Yes
Recall Mode	None	Max	Max	Max	Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	38.0	38.0	36.0	34.0	34.0	54.0	54.0	42.3	42.3
Actuated g/C Ratio	0.38	0.38	0.36	0.34	0.34	0.54	0.54	0.42	0.42
v/c Ratio	0.03	0.61	0.26	0.26	0.52	0.14	0.27	0.02	0.34
Control Delay	19.7	29.6	5.9	26.9	31.1	12.0	7.1	17.2	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.7	29.6	5.9	26.9	31.1	12.0	7.1	17.2	20.1
LOS	B	C	A	C	C	B	A	B	C
Approach Delay		22.4			29.8		8.8		19.9
Approach LOS		C			C		A		B

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 21.0	Intersection LOS: C
Intersection Capacity Utilization 86.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 341: Bridge Street West & Lexington Road





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	19	444	192	155	333	137	259	17	238
v/c Ratio	0.03	0.61	0.26	0.26	0.52	0.14	0.27	0.02	0.34
Control Delay	19.7	29.6	5.9	26.9	31.1	12.0	7.1	17.2	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.7	29.6	5.9	26.9	31.1	12.0	7.1	17.2	20.1
Queue Length 50th (m)	2.3	68.6	3.0	20.1	47.6	12.5	12.6	1.9	28.7
Queue Length 95th (m)	6.8	100.5	17.0	40.6	84.9	22.1	25.8	5.9	46.9
Internal Link Dist (m)		853.1			403.2		296.6		638.7
Turn Bay Length (m)	45.0		45.0	20.0		80.0		40.0	
Base Capacity (vph)	674	722	737	603	646	958	947	750	704
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.61	0.26	0.26	0.52	0.14	0.27	0.02	0.34

Intersection Summary



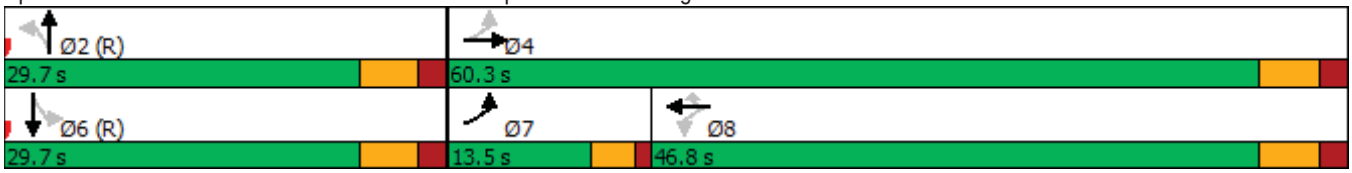
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	444	192	155	326	7	137	101	158	17	198	40
Future Volume (vph)	19	444	192	155	326	7	137	101	158	17	198	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.91		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Flt Permitted	0.33	1.00	1.00	0.37	1.00		0.48	1.00		0.60	1.00	
Satd. Flow (perm)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	19	444	192	155	326	7	137	101	158	17	198	40
RTOR Reduction (vph)	0	0	103	0	1	0	0	59	0	0	8	0
Lane Group Flow (vph)	19	444	89	155	332	0	137	200	0	17	230	0
Confl. Peds. (#/hr)	4		1	1		4	3		3	3		3
Heavy Vehicles (%)	0%	5%	3%	2%	4%	0%	6%	8%	3%	7%	5%	0%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	2	0	0	0	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	38.4	38.4	38.4	32.0	32.0		49.6	49.6		37.9	37.9	
Effective Green, g (s)	38.4	40.4	38.4	34.0	34.0		49.6	51.6		39.9	39.9	
Actuated g/C Ratio	0.38	0.40	0.38	0.34	0.34		0.50	0.52		0.40	0.40	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	681	767	672	603	646		880	851		708	658	
v/s Ratio Prot	0.00	c0.23			0.17		0.01	c0.12			c0.14	
v/s Ratio Perm	0.01		0.05	0.09			0.07			0.01		
v/c Ratio	0.03	0.58	0.13	0.26	0.51		0.16	0.23		0.02	0.35	
Uniform Delay, d1	20.3	23.2	20.0	23.9	26.4		14.2	13.3		18.2	21.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	3.2	0.4	1.0	2.9		0.1	0.6		0.1	1.5	
Delay (s)	20.3	26.4	20.4	24.9	29.3		14.3	14.0		18.3	22.5	
Level of Service	C	C	C	C	C		B	B		B	C	
Approach Delay (s)		24.4			27.9			14.1			22.2	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	182	316	539	155	0	161	0
Future Volume (vph)	182	316	539	155	0	161	0
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	NA
Protected Phases	7	4	8		2		6
Permitted Phases	4			8		6	
Detector Phase	7	4	8	8	2	6	6
Switch Phase							
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	46.0	46.0	46.0	29.7	29.7	29.7
Total Split (s)	13.5	60.3	46.8	46.8	29.7	29.7	29.7
Total Split (%)	15.0%	67.0%	52.0%	52.0%	33.0%	33.0%	33.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	Max	Max	Max	C-Max	C-Max	C-Max
Act Effct Green (s)	56.3	56.3	43.6	43.6	25.7	25.7	25.7
Actuated g/C Ratio	0.63	0.63	0.48	0.48	0.29	0.29	0.29
v/c Ratio	0.16	0.31	0.67	0.17	0.00	0.32	0.37
Control Delay	7.5	8.8	23.3	2.8	0.0	27.4	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	8.8	23.3	2.8	0.0	27.4	1.8
LOS	A	A	C	A	A	C	A
Approach Delay		8.3	18.7				11.2
Approach LOS		A	B				B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 13.5	Intersection LOS: B
Intersection Capacity Utilization 96.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 345: West Site Access/Davenport Road & Lexington Road





Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	182	318	539	155	1	161	281
v/c Ratio	0.16	0.31	0.67	0.17	0.00	0.32	0.37
Control Delay	7.5	8.8	23.3	2.8	0.0	27.4	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	8.8	23.3	2.8	0.0	27.4	1.8
Queue Length 50th (m)	11.9	23.0	69.4	0.0	0.0	21.8	0.0
Queue Length 95th (m)	20.3	36.6	106.6	9.4	0.0	38.2	2.3
Internal Link Dist (m)		791.8	41.0		60.3		616.1
Turn Bay Length (m)						70.0	
Base Capacity (vph)	1110	1032	799	927	831	506	751
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.31	0.67	0.17	0.00	0.32	0.37

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	182	316	2	0	539	155	0	0	1	161	0	281
Future Volume (vph)	182	316	2	0	539	155	0	0	1	161	0	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	0.96		0.97		1.00	0.96	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00		0.99	1.00	
Frt	1.00	1.00			1.00	0.85		0.86		1.00	0.85	
Flt Protected	0.95	1.00			1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1775	1650			1650	1750		1550		1775	1650	
Flt Permitted	0.26	1.00			1.00	1.00		1.00		0.76	1.00	
Satd. Flow (perm)	1775	1650			1650	1750		1550		1775	1650	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	182	316	2	0	539	155	0	0	1	161	0	281
RTOR Reduction (vph)	0	0	0	0	0	80	0	1	0	0	201	0
Lane Group Flow (vph)	182	318	0	0	539	75	0	0	0	161	80	0
Confl. Peds. (#/hr)	14		11	11		14	12		5	5		12
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	3%	2%	0%	0%	1%	4%	0%	0%	0%	7%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	2	2	0	0	0	0	0	0
Turn Type	pm+pt	NA			NA	Perm		NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	54.3	54.3			41.6	41.6		23.7		23.7	23.7	
Effective Green, g (s)	54.3	56.3			43.6	43.6		25.7		25.7	25.7	
Actuated g/C Ratio	0.60	0.63			0.48	0.48		0.29		0.29	0.29	
Clearance Time (s)	4.0	6.0			6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	1070	1032			799	847		442		506	471	
v/s Ratio Prot	0.02	c0.19			c0.33			0.00			0.05	
v/s Ratio Perm	0.09					0.04				c0.09		
v/c Ratio	0.17	0.31			0.67	0.09		0.00		0.32	0.17	
Uniform Delay, d1	10.2	7.8			17.8	12.5		23.0		25.3	24.1	
Progression Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.8			4.5	0.2		0.0		1.7	0.8	
Delay (s)	10.3	8.6			22.3	12.7		23.0		26.9	24.9	
Level of Service	B	A			C	B		C		C	C	
Approach Delay (s)		9.2			20.2			23.0			25.7	
Approach LOS		A			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	96.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	899	2	2	646	4	6
Future Volume (Veh/h)	899	2	2	646	4	6
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	899	2	2	646	4	6
Pedestrians					5	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	65					
pX, platoon unblocked			0.62		0.62	0.62
vC, conflicting volume			906		1555	905
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			536		1589	535
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		95	98
cM capacity (veh/h)			639		73	337

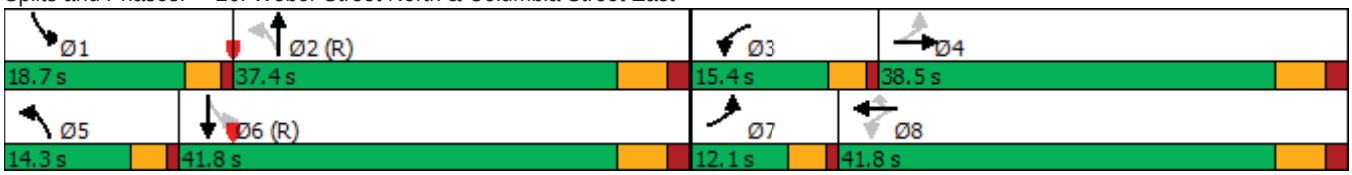
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	901	2	646	10
Volume Left	0	2	0	4
Volume Right	2	0	0	6
cSH	1700	639	1700	138
Volume to Capacity	0.53	0.00	0.38	0.07
Queue Length 95th (m)	0.0	0.1	0.0	1.8
Control Delay (s)	0.0	10.6	0.0	33.1
Lane LOS		B		D
Approach Delay (s)	0.0	0.0		33.1
Approach LOS				D

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	136	594	259	447	165	229	638	189	736
Future Volume (vph)	136	594	259	447	165	229	638	189	736
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	9.0	38.5	9.0	38.5	38.5	9.5	37.4	9.0	37.7
Total Split (s)	12.1	38.5	15.4	41.8	41.8	14.3	37.4	18.7	41.8
Total Split (%)	11.0%	35.0%	14.0%	38.0%	38.0%	13.0%	34.0%	17.0%	38.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	1.0	2.0	1.0	2.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	-2.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max	Max	None	C-Max	None	C-Max
Act Effct Green (s)	42.6	34.7	49.2	38.0	36.0	46.2	36.0	49.9	37.9
Actuated g/C Ratio	0.39	0.32	0.45	0.35	0.33	0.42	0.33	0.45	0.34
v/c Ratio	0.20	0.74	0.33	0.68	0.24	0.31	0.69	0.23	0.66
Control Delay	19.1	35.4	20.7	37.3	5.1	19.6	34.9	18.1	33.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	35.4	20.7	37.3	5.1	19.6	34.9	18.1	33.4
LOS	B	D	C	D	A	B	C	B	C
Approach Delay		33.2		26.2			31.6		30.5
Approach LOS		C		C			C		C

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 14.3 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 30.5	Intersection LOS: C
Intersection Capacity Utilization 93.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 26: Weber Street North & Columbia Street East





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	136	867	259	447	165	229	824	189	819
v/c Ratio	0.20	0.74	0.33	0.68	0.24	0.31	0.69	0.23	0.66
Control Delay	19.1	35.4	20.7	37.3	5.1	19.6	34.9	18.1	33.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.1	35.4	20.7	37.3	5.1	19.6	34.9	18.1	33.4
Queue Length 50th (m)	16.8	80.6	34.7	81.8	0.0	28.8	77.5	23.2	77.0
Queue Length 95th (m)	28.9	103.7	53.3	117.1	14.0	45.1	102.7	37.4	98.1
Internal Link Dist (m)		167.0		721.2			592.4		184.3
Turn Bay Length (m)	40.0		100.0			75.0		65.0	
Base Capacity (vph)	690	1167	795	655	683	747	1186	840	1232
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.74	0.33	0.68	0.24	0.31	0.69	0.23	0.66

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	594	273	259	447	165	229	638	186	189	736	83
Future Volume (vph)	136	594	273	259	447	165	229	638	186	189	736	83
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	3550		1775	1900	1750	1775	3550		1775	3550	
Flt Permitted	0.25	1.00		0.11	1.00	1.00	0.17	1.00		0.14	1.00	
Satd. Flow (perm)	1775	3550		1775	1900	1750	1775	3550		1775	3550	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	136	594	273	259	447	165	229	638	186	189	736	83
RTOR Reduction (vph)	0	49	0	0	0	111	0	24	0	0	8	0
Lane Group Flow (vph)	136	818	0	259	447	54	229	800	0	189	811	0
Confl. Peds. (#/hr)	4		17	17		4	6		8	8		6
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	1%	2%	1%	1%	1%	3%	2%	0%	1%	1%	0%
Bus Blockages (#/hr)	0	2	0	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	40.6	32.7		47.2	36.0	36.0	44.2	34.0		48.0	35.9	
Effective Green, g (s)	40.6	34.7		47.2	38.0	36.0	44.2	36.0		48.0	37.9	
Actuated g/C Ratio	0.37	0.32		0.43	0.35	0.33	0.40	0.33		0.44	0.34	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	655	1119		761	656	572	713	1161		774	1223	
v/s Ratio Prot	0.01	c0.23		c0.03	0.24		c0.03	0.23		c0.03	c0.23	
v/s Ratio Perm	0.06			0.11		0.03	0.10			0.08		
v/c Ratio	0.21	0.73		0.34	0.68	0.09	0.32	0.69		0.24	0.66	
Uniform Delay, d1	25.0	33.5		23.9	30.8	25.7	24.0	32.1		21.7	30.6	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	4.2		0.3	5.6	0.3	0.3	3.4		0.2	2.8	
Delay (s)	25.2	37.7		24.2	36.5	26.0	24.2	35.5		21.9	33.5	
Level of Service	C	D		C	D	C	C	D		C	C	
Approach Delay (s)		36.0			30.8			33.1			31.3	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	43	502	164	199	393	235	220	19	150
Future Volume (vph)	43	502	164	199	393	235	220	19	150
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4			8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	4	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	5.0	8.0	8.0	8.0
Minimum Split (s)	9.0	32.0	32.0	27.0	27.0	9.0	48.0	48.0	48.0
Total Split (s)	10.0	37.0	37.0	27.0	27.0	15.0	63.0	48.0	48.0
Total Split (%)	10.0%	37.0%	37.0%	27.0%	27.0%	15.0%	63.0%	48.0%	48.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes		Yes	Yes
Recall Mode	None	Max	Max	Max	Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	33.0	33.0	31.0	27.0	27.0	59.0	59.0	44.7	44.7
Actuated g/C Ratio	0.33	0.33	0.31	0.27	0.27	0.59	0.59	0.45	0.45
v/c Ratio	0.07	0.80	0.26	0.42	0.79	0.22	0.49	0.02	0.23
Control Delay	23.6	41.8	9.8	34.8	48.0	10.4	10.7	16.1	17.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	41.8	9.8	34.8	48.0	10.4	10.7	16.1	17.4
LOS	C	D	A	C	D	B	B	B	B
Approach Delay		33.3			43.7		10.6		17.3
Approach LOS		C			D		B		B

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 27.3	Intersection LOS: C
Intersection Capacity Utilization 92.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 341: Bridge Street West & Lexington Road





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	502	164	199	406	235	495	19	172
v/c Ratio	0.07	0.80	0.26	0.42	0.79	0.22	0.49	0.02	0.23
Control Delay	23.6	41.8	9.8	34.8	48.0	10.4	10.7	16.1	17.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.6	41.8	9.8	34.8	48.0	10.4	10.7	16.1	17.4
Queue Length 50th (m)	5.7	87.9	6.3	33.6	77.0	20.0	38.7	2.0	19.1
Queue Length 95th (m)	13.2	#136.9	20.7	55.0	#132.7	31.9	62.5	6.1	33.0
Internal Link Dist (m)		853.1			403.2		296.6		638.7
Turn Bay Length (m)	45.0		45.0	20.0		80.0		40.0	
Base Capacity (vph)	585	627	623	479	514	1047	1018	793	742
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.80	0.26	0.42	0.79	0.22	0.49	0.02	0.23

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	502	164	199	393	13	235	220	275	19	150	22
Future Volume (vph)	43	502	164	199	393	13	235	220	275	19	150	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.92		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Flt Permitted	0.14	1.00	1.00	0.24	1.00		0.56	1.00		0.48	1.00	
Satd. Flow (perm)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	43	502	164	199	393	13	235	220	275	19	150	22
RTOR Reduction (vph)	0	0	80	0	1	0	0	47	0	0	5	0
Lane Group Flow (vph)	43	502	84	199	405	0	235	448	0	19	167	0
Confl. Peds. (#/hr)	5		3	3		5			2	2		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	1%	1%	1%	0%	2%	1%	1%	0%	1%	5%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	2	0	0	0	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	32.6	32.6	32.6	25.0	25.0		55.4	55.4		41.1	41.1	
Effective Green, g (s)	32.6	34.6	32.6	27.0	27.0		55.4	57.4		43.1	43.1	
Actuated g/C Ratio	0.33	0.35	0.33	0.27	0.27		0.55	0.57		0.43	0.43	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	578	657	570	479	513		983	947		765	711	
v/s Ratio Prot	0.00	c0.26			0.21		0.02	c0.27			0.10	
v/s Ratio Perm	0.02		0.05	0.11			0.11			0.01		
v/c Ratio	0.07	0.76	0.15	0.42	0.79		0.24	0.47		0.02	0.23	
Uniform Delay, d1	25.6	29.1	23.9	30.0	33.9		11.7	12.5		16.4	18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	8.2	0.5	2.6	11.7		0.1	1.7		0.1	0.8	
Delay (s)	25.6	37.3	24.4	32.7	45.5		11.8	14.2		16.4	18.8	
Level of Service	C	D	C	C	D		B	B		B	B	
Approach Delay (s)		33.6			41.3			13.4			18.5	
Approach LOS		C			D			B			B	

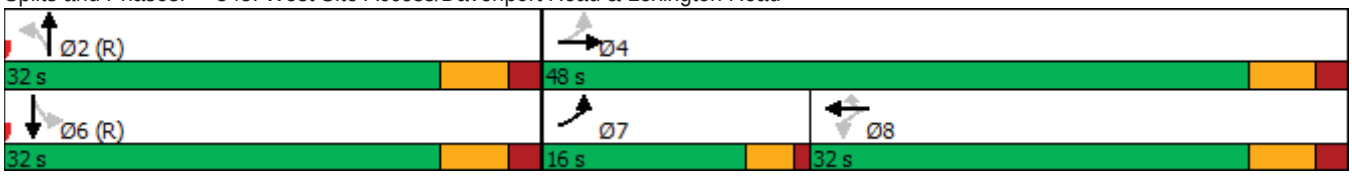
Intersection Summary			
HCM 2000 Control Delay	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	202	569	397	253	1	0	329	0
Future Volume (vph)	202	569	397	253	1	0	329	0
Turn Type	pm+pt	NA	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	8			2		6
Permitted Phases	4			8	2		6	
Detector Phase	7	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (s)	16.0	48.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes				
Recall Mode	None	Max	Max	Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	44.0	44.0	30.1	30.1		28.0	28.0	28.0
Actuated g/C Ratio	0.55	0.55	0.38	0.38		0.35	0.35	0.35
v/c Ratio	0.21	0.63	0.64	0.31		0.00	0.53	0.46
Control Delay	9.8	16.3	26.8	3.8		0.0	24.6	2.4
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	9.8	16.3	26.8	3.8		0.0	24.6	2.4
LOS	A	B	C	A		A	C	A
Approach Delay		14.6	17.8					12.2
Approach LOS		B	B					B

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 14.7	Intersection LOS: B
Intersection Capacity Utilization 87.7%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 345: West Site Access/Davenport Road & Lexington Road





Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	202	570	397	253	2	329	415
v/c Ratio	0.21	0.63	0.64	0.31	0.00	0.53	0.46
Control Delay	9.8	16.3	26.8	3.8	0.0	24.6	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.8	16.3	26.8	3.8	0.0	24.6	2.4
Queue Length 50th (m)	14.4	55.2	48.7	0.0	0.0	39.3	0.0
Queue Length 95th (m)	25.1	87.2	81.3	14.0	0.0	63.2	6.9
Internal Link Dist (m)		791.8	41.0		60.3		616.1
Turn Bay Length (m)						70.0	
Base Capacity (vph)	976	907	621	816	604	621	907
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.63	0.64	0.31	0.00	0.53	0.46

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	202	569	1	0	397	253	1	0	1	329	0	415
Future Volume (vph)	202	569	1	0	397	253	1	0	1	329	0	415
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	0.97		0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00		0.99	1.00	
Frt	1.00	1.00			1.00	0.85		0.93		1.00	0.85	
Flt Protected	0.95	1.00			1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1775	1650			1650	1750		1550		1775	1650	
Flt Permitted	0.30	1.00			1.00	1.00		0.90		0.76	1.00	
Satd. Flow (perm)	1775	1650			1650	1750		1550		1775	1650	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	202	569	1	0	397	253	1	0	1	329	0	415
RTOR Reduction (vph)	0	0	0	0	0	158	0	1	0	0	270	0
Lane Group Flow (vph)	202	570	0	0	397	95	0	1	0	329	145	0
Confl. Peds. (#/hr)	5					5	3		7	7		3
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	0%	0%	1%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	2	2	0	0	0	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	42.0	42.0			28.1	28.1		26.0		26.0	26.0	
Effective Green, g (s)	42.0	44.0			30.1	30.1		28.0		28.0	28.0	
Actuated g/C Ratio	0.52	0.55			0.38	0.38		0.35		0.35	0.35	
Clearance Time (s)	4.0	6.0			6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	931	907			620	658		542		621	577	
v/s Ratio Prot	0.03	c0.35			0.24						0.09	
v/s Ratio Perm	0.09					0.05		0.00		c0.19		
v/c Ratio	0.22	0.63			0.64	0.14		0.00		0.53	0.25	
Uniform Delay, d1	11.5	12.4			20.5	16.5		16.9		20.7	18.5	
Progression Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.1	3.3			5.0	0.5		0.0		3.2	1.0	
Delay (s)	11.6	15.7			25.5	16.9		16.9		24.0	19.6	
Level of Service	B	B			C	B		B		C	B	
Approach Delay (s)		14.6			22.2			16.9			21.5	
Approach LOS		B			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	87.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Appendix E

2027 Future Background Conditions Synchro Reports



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	526	1	6	751	7	1
Future Volume (Veh/h)	526	1	6	751	7	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	526	1	6	751	7	1
Pedestrians					9	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	65					
pX, platoon unblocked			0.83		0.83	0.83
vC, conflicting volume			536		1298	536
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			336		1257	336
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		96	100
cM capacity (veh/h)			1014		156	584

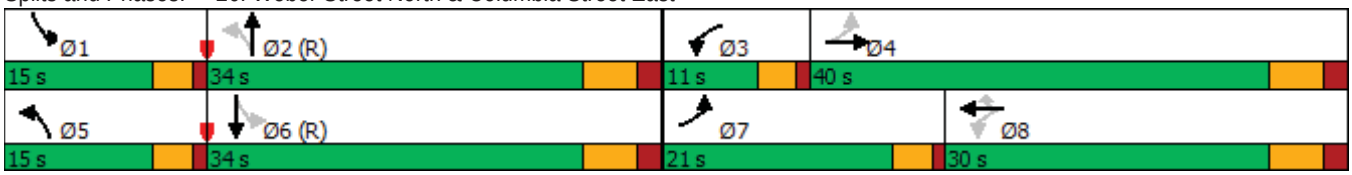
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	527	6	751	8
Volume Left	0	6	0	7
Volume Right	1	0	0	1
cSH	1700	1014	1700	172
Volume to Capacity	0.31	0.01	0.44	0.05
Queue Length 95th (m)	0.0	0.1	0.0	1.1
Control Delay (s)	0.0	8.6	0.0	27.0
Lane LOS		A		D
Approach Delay (s)	0.0	0.1		27.0
Approach LOS				D

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	49.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	95	370	205	485	172	212	351	180	331
Future Volume (vph)	95	370	205	485	172	212	351	180	331
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	9.0	30.0	9.0	30.0	30.0	9.5	34.0	9.0	34.0
Total Split (s)	21.0	40.0	11.0	30.0	30.0	15.0	34.0	15.0	34.0
Total Split (%)	21.0%	40.0%	11.0%	30.0%	30.0%	15.0%	34.0%	15.0%	34.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	1.0	2.0	1.0	2.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	-2.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max	Max	None	C-Max	None	C-Max
Act Effct Green (s)	44.5	36.0	42.1	36.5	34.5	43.7	30.8	43.1	30.5
Actuated g/C Ratio	0.44	0.36	0.42	0.36	0.34	0.44	0.31	0.43	0.30
v/c Ratio	0.12	0.43	0.27	0.70	0.24	0.27	0.42	0.24	0.33
Control Delay	15.4	19.3	18.1	35.1	5.0	18.4	26.0	17.9	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.4	19.3	18.1	35.1	5.0	18.4	26.0	17.9	27.3
LOS	B	B	B	D	A	B	C	B	C
Approach Delay		18.8		25.1			23.7		24.2
Approach LOS		B		C			C		C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 91 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.70	
Intersection Signal Delay: 23.0	Intersection LOS: C
Intersection Capacity Utilization 79.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 26: Weber Street North & Columbia Street East





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	95	591	205	485	172	212	472	180	364
v/c Ratio	0.12	0.43	0.27	0.70	0.24	0.27	0.42	0.24	0.33
Control Delay	15.4	19.3	18.1	35.1	5.0	18.4	26.0	17.9	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.4	19.3	18.1	35.1	5.0	18.4	26.0	17.9	27.3
Queue Length 50th (m)	10.0	33.8	23.0	81.7	0.0	24.9	34.3	20.7	27.8
Queue Length 95th (m)	18.9	48.6	37.4	#133.4	14.2	40.4	48.5	34.6	40.1
Internal Link Dist (m)		167.0		721.2			592.4		184.3
Turn Bay Length (m)	40.0		100.0			75.0		65.0	
Base Capacity (vph)	834	1366	747	694	716	784	1127	792	1088
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.43	0.27	0.70	0.24	0.27	0.42	0.23	0.33

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	370	221	205	485	172	212	351	121	180	331	33
Future Volume (vph)	95	370	221	205	485	172	212	351	121	180	331	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	3550		1775	1900	1750	1775	3550		1775	3550	
Flt Permitted	0.21	1.00		0.32	1.00	1.00	0.45	1.00		0.36	1.00	
Satd. Flow (perm)	1775	3550		1775	1900	1750	1775	3550		1775	3550	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	95	370	221	205	485	172	212	351	121	180	331	33
RTOR Reduction (vph)	0	87	0	0	0	113	0	34	0	0	8	0
Lane Group Flow (vph)	95	504	0	205	485	59	212	438	0	180	356	0
Confl. Peds. (#/hr)	5		7	7		5	5		4	4		5
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	3%	2%	2%	3%	5%	1%	3%	4%	3%	6%	0%
Bus Blockages (#/hr)	0	2	0	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	42.1	34.8		41.5	34.5	34.5	38.5	28.0		37.9	27.7	
Effective Green, g (s)	42.1	36.8		41.5	36.5	34.5	38.5	30.0		37.9	29.7	
Actuated g/C Ratio	0.42	0.37		0.42	0.36	0.34	0.38	0.30		0.38	0.30	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	747	1306		736	693	603	683	1065		672	1054	
v/s Ratio Prot	0.01	0.14		c0.02	c0.26		c0.03	c0.12		0.03	0.10	
v/s Ratio Perm	0.04			0.10		0.03	0.09			0.07		
v/c Ratio	0.13	0.39		0.28	0.70	0.10	0.31	0.41		0.27	0.34	
Uniform Delay, d1	19.7	23.3		20.3	27.1	22.2	21.6	27.9		21.7	27.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.9		0.2	5.8	0.3	0.3	1.2		0.2	0.9	
Delay (s)	19.8	24.1		20.5	32.9	22.5	21.9	29.1		21.9	28.3	
Level of Service	B	C		C	C	C	C	C		C	C	
Approach Delay (s)		23.5			27.9			26.9			26.2	
Approach LOS		C			C			C			C	

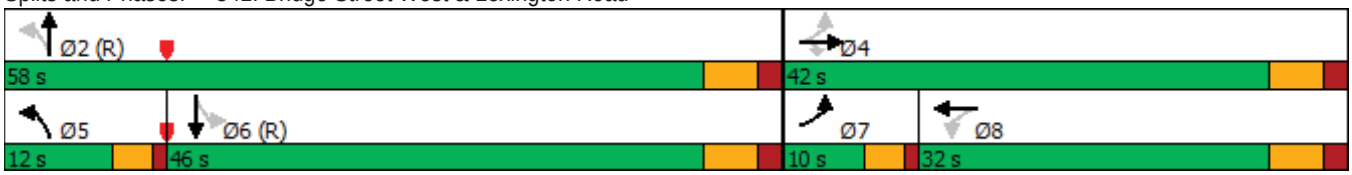
Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	21	490	212	171	360	151	112	19	219
Future Volume (vph)	21	490	212	171	360	151	112	19	219
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4			8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	4	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	5.0	8.0	8.0	8.0
Minimum Split (s)	9.0	32.0	32.0	32.0	32.0	9.0	46.0	46.0	46.0
Total Split (s)	10.0	42.0	42.0	32.0	32.0	12.0	58.0	46.0	46.0
Total Split (%)	10.0%	42.0%	42.0%	32.0%	32.0%	12.0%	58.0%	46.0%	46.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes		Yes	Yes
Recall Mode	None	Max	Max	Max	Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	38.0	38.0	36.0	34.0	34.0	54.0	54.0	42.2	42.2
Actuated g/C Ratio	0.38	0.38	0.36	0.34	0.34	0.54	0.54	0.42	0.42
v/c Ratio	0.03	0.68	0.29	0.28	0.57	0.16	0.30	0.03	0.37
Control Delay	19.8	31.7	7.0	27.2	32.5	12.1	7.9	17.3	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	31.7	7.0	27.2	32.5	12.1	7.9	17.3	20.9
LOS	B	C	A	C	C	B	A	B	C
Approach Delay		24.1			30.8		9.4		20.6
Approach LOS		C			C		A		C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 22.2	Intersection LOS: C
Intersection Capacity Utilization 90.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 341: Bridge Street West & Lexington Road





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	21	490	212	171	368	151	286	19	263
v/c Ratio	0.03	0.68	0.29	0.28	0.57	0.16	0.30	0.03	0.37
Control Delay	19.8	31.7	7.0	27.2	32.5	12.1	7.9	17.3	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.8	31.7	7.0	27.2	32.5	12.1	7.9	17.3	20.9
Queue Length 50th (m)	2.5	78.2	5.5	22.4	53.8	14.0	15.4	2.1	32.6
Queue Length 95th (m)	7.2	113.3	20.4	44.4	94.7	24.0	30.1	6.4	52.5
Internal Link Dist (m)		853.1			403.2		296.6		638.7
Turn Bay Length (m)	45.0		45.0	20.0		80.0		40.0	
Base Capacity (vph)	674	722	737	603	646	958	947	749	703
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.68	0.29	0.28	0.57	0.16	0.30	0.03	0.37

Intersection Summary



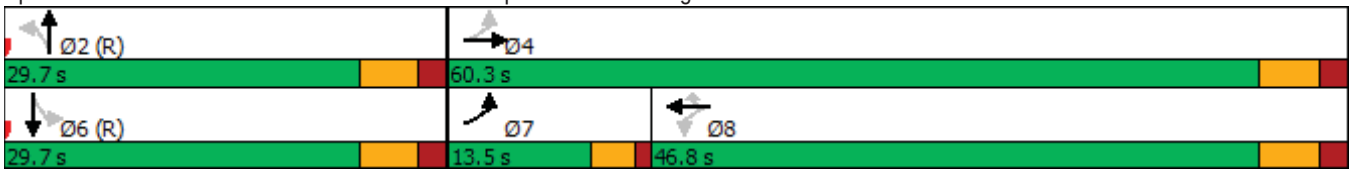
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	490	212	171	360	8	151	112	174	19	219	44
Future Volume (vph)	21	490	212	171	360	8	151	112	174	19	219	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.91		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Flt Permitted	0.29	1.00	1.00	0.32	1.00		0.45	1.00		0.58	1.00	
Satd. Flow (perm)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	21	490	212	171	360	8	151	112	174	19	219	44
RTOR Reduction (vph)	0	0	103	0	1	0	0	59	0	0	7	0
Lane Group Flow (vph)	21	490	109	171	367	0	151	227	0	19	256	0
Confl. Peds. (#/hr)	4		1	1		4	3		3	3		3
Heavy Vehicles (%)	0%	5%	3%	2%	4%	0%	6%	8%	3%	7%	5%	0%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	2	0	0	0	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	38.4	38.4	38.4	32.0	32.0		49.6	49.6		37.8	37.8	
Effective Green, g (s)	38.4	40.4	38.4	34.0	34.0		49.6	51.6		39.8	39.8	
Actuated g/C Ratio	0.38	0.40	0.38	0.34	0.34		0.50	0.52		0.40	0.40	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	681	767	672	603	646		880	851		706	656	
v/s Ratio Prot	0.00	c0.26			0.19		0.01	c0.14			c0.16	
v/s Ratio Perm	0.01		0.06	0.10			0.07			0.01		
v/c Ratio	0.03	0.64	0.16	0.28	0.57		0.17	0.27		0.03	0.39	
Uniform Delay, d1	20.6	23.9	20.2	24.1	27.0		14.4	13.6		18.3	21.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	4.1	0.5	1.2	3.6		0.1	0.8		0.1	1.7	
Delay (s)	20.7	28.0	20.7	25.3	30.6		14.5	14.3		18.4	23.2	
Level of Service	C	C	C	C	C		B	B		B	C	
Approach Delay (s)		25.7			28.9			14.4			22.9	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	23.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT
Lane Configurations							
Traffic Volume (vph)	201	349	595	171	0	178	0
Future Volume (vph)	201	349	595	171	0	178	0
Turn Type	pm+pt	NA	NA	Perm	NA	Perm	NA
Protected Phases	7	4	8		2		6
Permitted Phases	4			8		6	
Detector Phase	7	4	8	8	2	6	6
Switch Phase							
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	46.0	46.0	46.0	29.7	29.7	29.7
Total Split (s)	13.5	60.3	46.8	46.8	29.7	29.7	29.7
Total Split (%)	15.0%	67.0%	52.0%	52.0%	33.0%	33.0%	33.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	Max	Max	Max	C-Max	C-Max	C-Max
Act Effct Green (s)	56.3	56.3	43.4	43.4	25.7	25.7	25.7
Actuated g/C Ratio	0.63	0.63	0.48	0.48	0.29	0.29	0.29
v/c Ratio	0.18	0.34	0.75	0.18	0.00	0.35	0.42
Control Delay	7.6	9.1	26.4	2.7	0.0	28.0	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	9.1	26.4	2.7	0.0	28.0	3.3
LOS	A	A	C	A	A	C	A
Approach Delay		8.6	21.1				12.3
Approach LOS		A	C				B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 14.9	Intersection LOS: B
Intersection Capacity Utilization 97.1%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 345: West Site Access/Davenport Road & Lexington Road





Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	201	351	595	171	1	178	310
v/c Ratio	0.18	0.34	0.75	0.18	0.00	0.35	0.42
Control Delay	7.6	9.1	26.4	2.7	0.0	28.0	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	9.1	26.4	2.7	0.0	28.0	3.3
Queue Length 50th (m)	13.3	26.0	81.0	0.0	0.0	24.3	0.0
Queue Length 95th (m)	22.3	40.8	123.8	9.7	0.0	41.8	10.4
Internal Link Dist (m)		791.8	41.0		60.3		616.1
Turn Bay Length (m)						70.0	
Base Capacity (vph)	1110	1032	795	932	806	506	731
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.34	0.75	0.18	0.00	0.35	0.42

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	349	2	0	595	171	0	0	1	178	0	310
Future Volume (vph)	201	349	2	0	595	171	0	0	1	178	0	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	0.96		0.97		1.00	0.96	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00		0.99	1.00	
Frt	1.00	1.00			1.00	0.85		0.86		1.00	0.85	
Flt Protected	0.95	1.00			1.00	1.00		1.00		0.95	1.00	
Satd. Flow (prot)	1775	1650			1650	1750		1550		1775	1650	
Flt Permitted	0.22	1.00			1.00	1.00		1.00		0.76	1.00	
Satd. Flow (perm)	1775	1650			1650	1750		1550		1775	1650	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	201	349	2	0	595	171	0	0	1	178	0	310
RTOR Reduction (vph)	0	0	0	0	0	89	0	1	0	0	221	0
Lane Group Flow (vph)	201	351	0	0	595	82	0	0	0	178	89	0
Confl. Peds. (#/hr)	14		11	11		14	12		5	5		12
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	3%	2%	0%	0%	1%	4%	0%	0%	0%	7%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	2	2	0	0	0	0	0	0
Turn Type	pm+pt	NA			NA	Perm		NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	54.3	54.3			41.4	41.4		23.7		23.7	23.7	
Effective Green, g (s)	54.3	56.3			43.4	43.4		25.7		25.7	25.7	
Actuated g/C Ratio	0.60	0.63			0.48	0.48		0.29		0.29	0.29	
Clearance Time (s)	4.0	6.0			6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	1070	1032			795	843		442		506	471	
v/s Ratio Prot	0.02	c0.21			c0.36			0.00			0.05	
v/s Ratio Perm	0.09					0.05				c0.10		
v/c Ratio	0.19	0.34			0.75	0.10		0.00		0.35	0.19	
Uniform Delay, d1	11.1	8.0			18.9	12.7		23.0		25.5	24.3	
Progression Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.9			6.4	0.2		0.0		1.9	0.9	
Delay (s)	11.2	8.9			25.3	12.9		23.0		27.5	25.2	
Level of Service	B	A			C	B		C		C	C	
Approach Delay (s)		9.7			22.5			23.0			26.0	
Approach LOS		A			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	97.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	993	2	2	713	4	7
Future Volume (Veh/h)	993	2	2	713	4	7
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	993	2	2	713	4	7
Pedestrians					5	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	65					
pX, platoon unblocked			0.55		0.55	0.55
vC, conflicting volume			1000		1716	999
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			599		1889	597
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		91	97
cM capacity (veh/h)			546		43	280

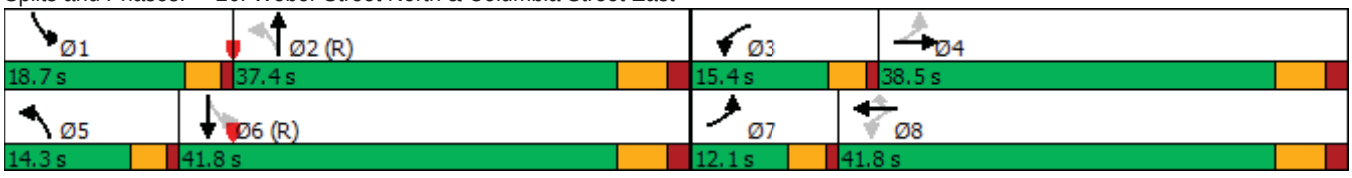
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	995	2	713	11
Volume Left	0	2	0	4
Volume Right	2	0	0	7
cSH	1700	546	1700	93
Volume to Capacity	0.59	0.00	0.42	0.12
Queue Length 95th (m)	0.0	0.1	0.0	2.9
Control Delay (s)	0.0	11.6	0.0	48.7
Lane LOS		B		E
Approach Delay (s)	0.0	0.0		48.7
Approach LOS				E

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	62.4%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	150	656	286	494	182	253	704	209	813
Future Volume (vph)	150	656	286	494	182	253	704	209	813
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	9.0	38.5	9.0	38.5	38.5	9.5	37.4	9.0	37.7
Total Split (s)	12.1	38.5	15.4	41.8	41.8	14.3	37.4	18.7	41.8
Total Split (%)	11.0%	35.0%	14.0%	38.0%	38.0%	13.0%	34.0%	17.0%	38.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	1.0	2.0	1.0	2.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	-2.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max	Max	None	C-Max	None	C-Max
Act Effct Green (s)	42.5	34.5	49.3	37.9	35.9	45.8	35.5	50.2	37.8
Actuated g/C Ratio	0.39	0.31	0.45	0.34	0.33	0.42	0.32	0.46	0.34
v/c Ratio	0.22	0.82	0.36	0.76	0.26	0.34	0.78	0.26	0.74
Control Delay	19.4	39.3	21.3	40.7	5.0	20.4	38.3	18.4	35.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	39.3	21.3	40.7	5.0	20.4	38.3	18.4	35.6
LOS	B	D	C	D	A	C	D	B	D
Approach Delay		36.6		28.2			34.4		32.4
Approach LOS		D		C			C		C

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 14.3 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 33.1	Intersection LOS: C
Intersection Capacity Utilization 97.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 26: Weber Street North & Columbia Street East





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	150	957	286	494	182	253	909	209	905
v/c Ratio	0.22	0.82	0.36	0.76	0.26	0.34	0.78	0.26	0.74
Control Delay	19.4	39.3	21.3	40.7	5.0	20.4	38.3	18.4	35.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	39.3	21.3	40.7	5.0	20.4	38.3	18.4	35.6
Queue Length 50th (m)	18.7	93.0	39.0	93.3	0.0	32.4	89.9	26.0	88.1
Queue Length 95th (m)	31.6	118.1	59.2	132.6	14.6	50.0	116.5	41.3	111.2
Internal Link Dist (m)		167.0		721.2			592.4		184.3
Turn Bay Length (m)	40.0		100.0			75.0		65.0	
Base Capacity (vph)	687	1162	795	654	693	739	1169	840	1227
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.82	0.36	0.76	0.26	0.34	0.78	0.25	0.74

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	656	301	286	494	182	253	704	205	209	813	92
Future Volume (vph)	150	656	301	286	494	182	253	704	205	209	813	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	3550		1775	1900	1750	1775	3550		1775	3550	
Flt Permitted	0.19	1.00		0.11	1.00	1.00	0.13	1.00		0.11	1.00	
Satd. Flow (perm)	1775	3550		1775	1900	1750	1775	3550		1775	3550	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	150	656	301	286	494	182	253	704	205	209	813	92
RTOR Reduction (vph)	0	49	0	0	0	123	0	24	0	0	8	0
Lane Group Flow (vph)	150	908	0	286	494	59	253	885	0	209	897	0
Confl. Peds. (#/hr)	4		17	17		4	6		8	8		6
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	1%	2%	1%	1%	1%	3%	2%	0%	1%	1%	0%
Bus Blockages (#/hr)	0	2	0	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	40.5	32.5		47.3	35.9	35.9	43.8	33.5		48.4	35.8	
Effective Green, g (s)	40.5	34.5		47.3	37.9	35.9	43.8	35.5		48.4	37.8	
Actuated g/C Ratio	0.37	0.31		0.43	0.34	0.33	0.40	0.32		0.44	0.34	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	653	1113		763	654	571	706	1145		781	1219	
v/s Ratio Prot	0.02	c0.26		c0.04	0.26		c0.03	0.25		c0.03	c0.25	
v/s Ratio Perm	0.07			0.12		0.03	0.11			0.09		
v/c Ratio	0.23	0.82		0.37	0.76	0.10	0.36	0.77		0.27	0.74	
Uniform Delay, d1	25.8	34.8		26.1	31.9	25.8	25.9	33.6		22.6	31.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	6.6		0.3	7.9	0.4	0.3	5.1		0.2	4.0	
Delay (s)	26.0	41.5		26.4	39.9	26.2	26.2	38.7		22.7	35.7	
Level of Service	C	D		C	D	C	C	D		C	D	
Approach Delay (s)		39.4			33.3			36.0			33.3	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	35.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	47	554	181	220	434	259	243	21	166
Future Volume (vph)	47	554	181	220	434	259	243	21	166
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4			8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	4	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	5.0	8.0	8.0	8.0
Minimum Split (s)	9.0	32.0	32.0	27.0	27.0	9.0	48.0	48.0	48.0
Total Split (s)	10.0	37.0	37.0	27.0	27.0	15.0	63.0	48.0	48.0
Total Split (%)	10.0%	37.0%	37.0%	27.0%	27.0%	15.0%	63.0%	48.0%	48.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes		Yes	Yes
Recall Mode	None	Max	Max	Max	Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	33.0	33.0	31.0	27.0	27.0	59.0	59.0	44.5	44.5
Actuated g/C Ratio	0.33	0.33	0.31	0.27	0.27	0.59	0.59	0.44	0.44
v/c Ratio	0.08	0.88	0.29	0.46	0.87	0.25	0.54	0.03	0.26
Control Delay	23.7	49.4	11.3	35.7	55.6	10.6	11.8	16.1	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	49.4	11.3	35.7	55.6	10.6	11.8	16.1	17.9
LOS	C	D	B	D	E	B	B	B	B
Approach Delay		39.0			49.0		11.4		17.7
Approach LOS		D			D		B		B

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 30.9	Intersection LOS: C
Intersection Capacity Utilization 96.3%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 341: Bridge Street West & Lexington Road





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	47	554	181	220	448	259	547	21	190
v/c Ratio	0.08	0.88	0.29	0.46	0.87	0.25	0.54	0.03	0.26
Control Delay	23.7	49.4	11.3	35.7	55.6	10.6	11.8	16.1	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	49.4	11.3	35.7	55.6	10.6	11.8	16.1	17.9
Queue Length 50th (m)	6.2	100.8	8.7	37.7	~92.5	22.4	46.3	2.3	21.5
Queue Length 95th (m)	14.2	#159.6	24.4	60.5	#151.7	35.3	73.3	6.5	36.3
Internal Link Dist (m)		853.1			403.2		296.6		638.7
Turn Bay Length (m)	45.0		45.0	20.0		80.0		40.0	
Base Capacity (vph)	585	627	623	479	514	1047	1018	789	738
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.88	0.29	0.46	0.87	0.25	0.54	0.03	0.26

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	554	181	220	434	14	259	243	304	21	166	24
Future Volume (vph)	47	554	181	220	434	14	259	243	304	21	166	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.92		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Flt Permitted	0.14	1.00	1.00	0.16	1.00		0.54	1.00		0.46	1.00	
Satd. Flow (perm)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	554	181	220	434	14	259	243	304	21	166	24
RTOR Reduction (vph)	0	0	80	0	1	0	0	47	0	0	5	0
Lane Group Flow (vph)	47	554	101	220	447	0	259	500	0	21	185	0
Confl. Peds. (#/hr)	5		3	3		5			2	2		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	1%	1%	1%	0%	2%	1%	1%	0%	1%	5%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	2	0	0	0	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	32.6	32.6	32.6	25.0	25.0		55.4	55.4		40.9	40.9	
Effective Green, g (s)	32.6	34.6	32.6	27.0	27.0		55.4	57.4		42.9	42.9	
Actuated g/C Ratio	0.33	0.35	0.33	0.27	0.27		0.55	0.57		0.43	0.43	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	578	657	570	479	513		983	947		761	707	
v/s Ratio Prot	0.00	c0.29			0.24		0.03	c0.30			0.11	
v/s Ratio Perm	0.02		0.06	0.12			0.12			0.01		
v/c Ratio	0.08	0.84	0.18	0.46	0.87		0.26	0.53		0.03	0.26	
Uniform Delay, d1	26.3	30.2	24.1	30.4	34.8		11.9	13.0		16.5	18.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	12.5	0.7	3.2	18.0		0.1	2.1		0.1	0.9	
Delay (s)	26.3	42.7	24.8	33.6	52.8		12.0	15.1		16.6	19.3	
Level of Service	C	D	C	C	D		B	B		B	B	
Approach Delay (s)		37.6			46.5			14.1			19.0	
Approach LOS		D			D			B			B	

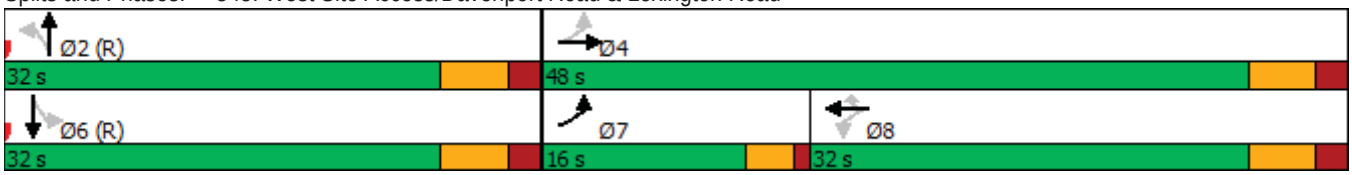
Intersection Summary			
HCM 2000 Control Delay	30.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	223	628	438	279	1	0	363	0
Future Volume (vph)	223	628	438	279	1	0	363	0
Turn Type	pm+pt	NA	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	8			2		6
Permitted Phases	4			8	2		6	
Detector Phase	7	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (s)	16.0	48.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes				
Recall Mode	None	Max	Max	Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	44.0	44.0	29.7	29.7		28.0	28.0	28.0
Actuated g/C Ratio	0.55	0.55	0.37	0.37		0.35	0.35	0.35
v/c Ratio	0.23	0.69	0.71	0.34		0.00	0.58	0.51
Control Delay	10.0	18.2	30.2	3.8		0.0	25.9	3.8
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	10.0	18.2	30.2	3.8		0.0	25.9	3.8
LOS	B	B	C	A		A	C	A
Approach Delay		16.0	19.9					13.6
Approach LOS		B	B					B

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 16.4	Intersection LOS: B
Intersection Capacity Utilization 94.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 345: West Site Access/Davenport Road & Lexington Road





Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	223	629	438	279	2	363	458
v/c Ratio	0.23	0.69	0.71	0.34	0.00	0.58	0.51
Control Delay	10.0	18.2	30.2	3.8	0.0	25.9	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	18.2	30.2	3.8	0.0	25.9	3.8
Queue Length 50th (m)	16.2	64.4	56.2	0.0	0.0	44.3	0.0
Queue Length 95th (m)	27.5	102.1	#100.6	14.6	0.0	70.8	15.0
Internal Link Dist (m)		791.8	41.0		60.3		616.1
Turn Bay Length (m)						70.0	
Base Capacity (vph)	976	907	613	825	604	621	892
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.69	0.71	0.34	0.00	0.58	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	223	628	1	0	438	279	1	0	1	363	0	458
Future Volume (vph)	223	628	1	0	438	279	1	0	1	363	0	458
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	0.97		0.98		1.00	0.98	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00		0.99	1.00	
Frt	1.00	1.00			1.00	0.85		0.93		1.00	0.85	
Flt Protected	0.95	1.00			1.00	1.00		0.98		0.95	1.00	
Satd. Flow (prot)	1775	1650			1650	1750		1550		1775	1650	
Flt Permitted	0.25	1.00			1.00	1.00		0.89		0.76	1.00	
Satd. Flow (perm)	1775	1650			1650	1750		1550		1775	1650	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	223	628	1	0	438	279	1	0	1	363	0	458
RTOR Reduction (vph)	0	0	0	0	0	175	0	1	0	0	298	0
Lane Group Flow (vph)	223	629	0	0	438	104	0	1	0	363	160	0
Confl. Peds. (#/hr)	5					5	3		7	7		3
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	0%	0%	1%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	2	2	0	0	0	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	42.0	42.0			27.7	27.7		26.0		26.0	26.0	
Effective Green, g (s)	42.0	44.0			29.7	29.7		28.0		28.0	28.0	
Actuated g/C Ratio	0.52	0.55			0.37	0.37		0.35		0.35	0.35	
Clearance Time (s)	4.0	6.0			6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	931	907			612	649		542		621	577	
v/s Ratio Prot	0.03	c0.38			0.27						0.10	
v/s Ratio Perm	0.09					0.06		0.00		c0.20		
v/c Ratio	0.24	0.69			0.72	0.16		0.00		0.58	0.28	
Uniform Delay, d1	12.1	13.1			21.5	16.8		16.9		21.2	18.7	
Progression Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.1	4.4			7.0	0.5		0.0		4.0	1.2	
Delay (s)	12.2	17.4			28.6	17.3		16.9		25.2	19.9	
Level of Service	B	B			C	B		B		C	B	
Approach Delay (s)		16.1			24.2			16.9			22.3	
Approach LOS		B			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Appendix F

ITE Trip Generation Manual Source Data

Land Use: 252
Senior Adult Housing—Attached

Description

Senior adult housing consists of attached independent living developments, including retirement communities, age-restricted housing, and active adult communities. These developments may include limited social or recreational services. However, they generally lack centralized dining and onsite medical facilities. Residents in these communities live independently, are typically active (requiring little to no medical supervision) and may or may not be retired. Senior adult housing—detached (Land Use 251), congregate care facility (Land Use 253), assisted living (Land Use 254), and continuing care retirement community (Land Use 255) are related uses.

Additional Data

Time-of-day distribution data for this land use are presented in Appendix A. For the one general urban/suburban site with data, the overall highest vehicle volumes during the AM and PM on a weekday were counted between 11:45 a.m. and 12:45 p.m. and 12:00 and 1:00 p.m., respectively.

The sites were surveyed in the 1980s, the 1990s, and the 2000s in Alberta (CAN), California, Illinois, New Hampshire, New Jersey, New York, and Pennsylvania.

Source Numbers

272, 501, 576, 602, 703, 734, 741, 902, 970

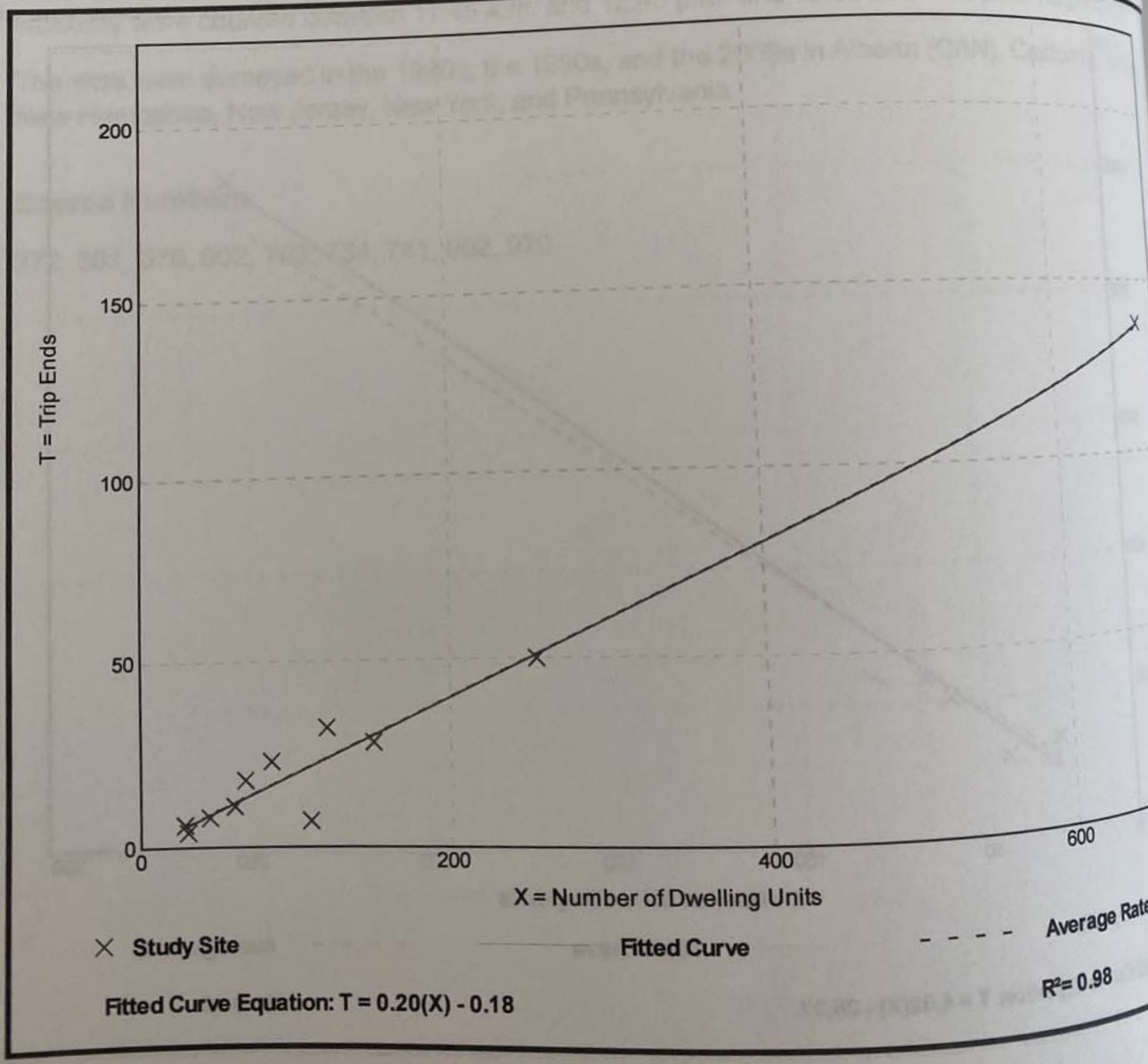
Senior Adult Housing - Attached
(252)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 11
Avg. Num. of Dwelling Units: 148
Directional Distribution: 35% entering, 65% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.20	0.06 - 0.27	0.05

Data Plot and Equation



Fitted Curve Equation: T = 0.20(X) - 0.18

R^2= 0.98

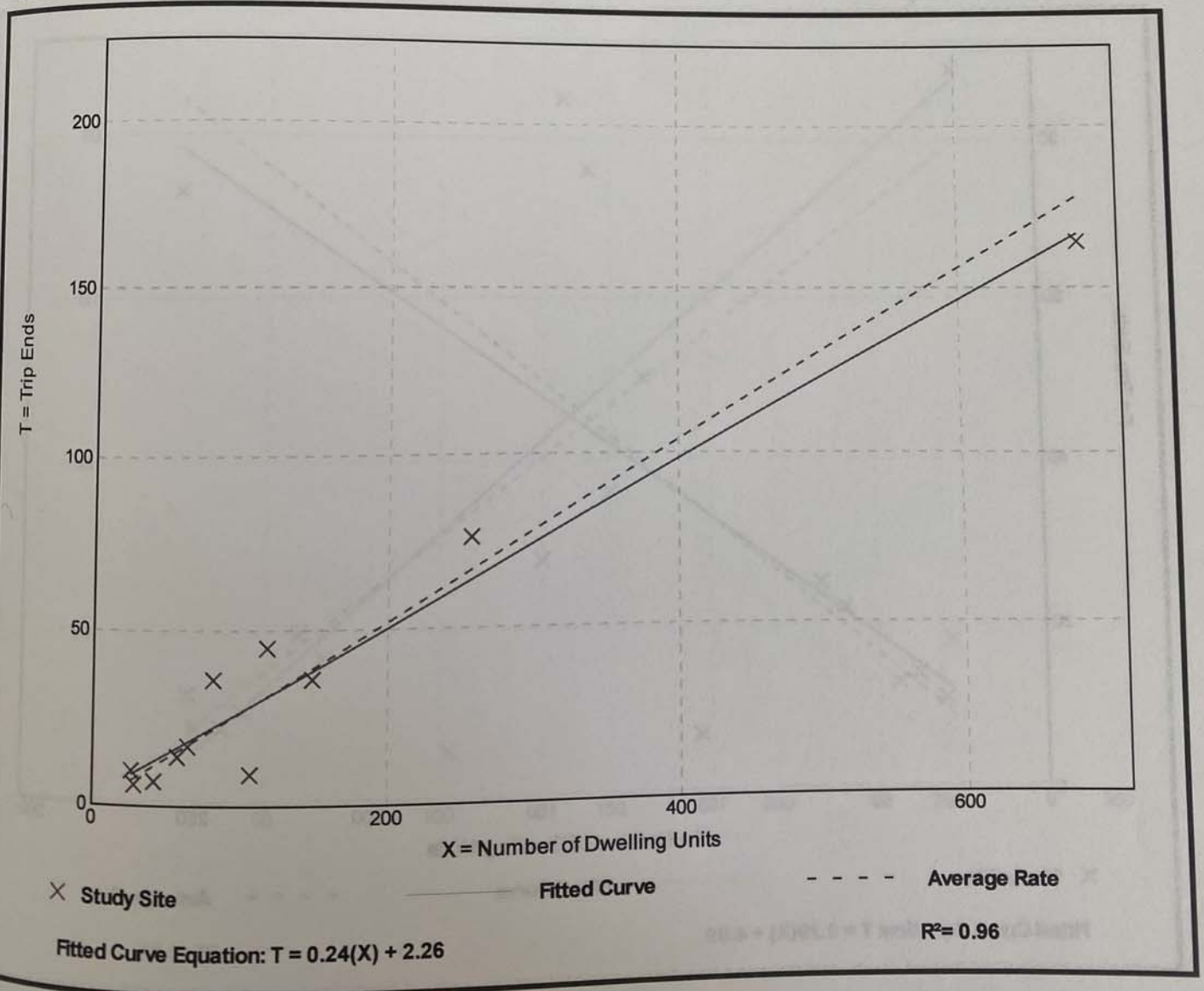
Senior Adult Housing - Attached
(252)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 11
Avg. Num. of Dwelling Units: 148
Directional Distribution: 55% entering, 45% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.26	0.08 - 0.43	0.08

Data Plot and Equation



Fitted Curve Equation: T = 0.24(X) + 2.26

Senior Adult Housing - Attached
(252)

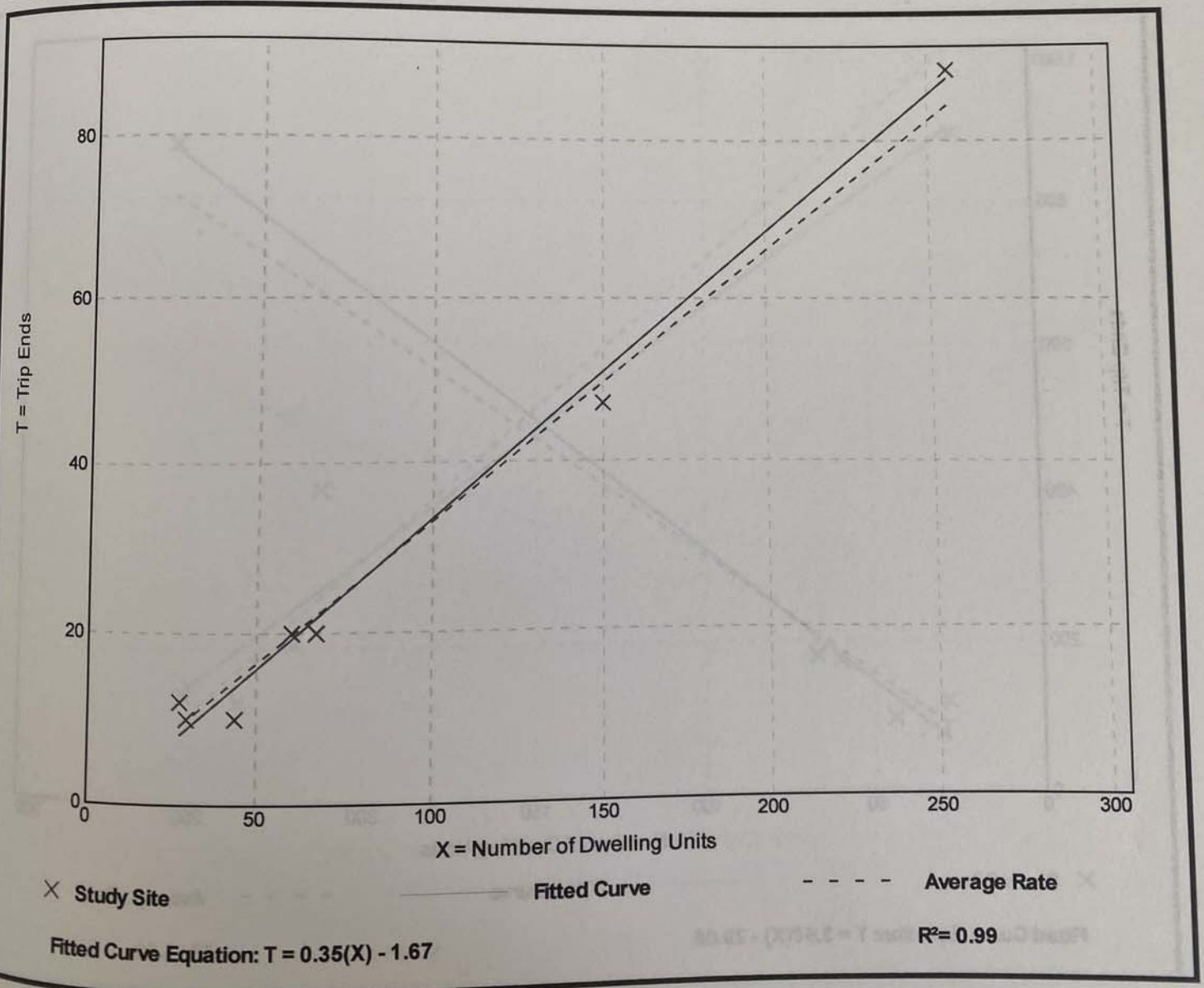
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Saturday, Peak Hour of Generator**

Setting/Location: **General Urban/Suburban**
Number of Studies: 7
Avg. Num. of Dwelling Units: 91
Directional Distribution: 62% entering, 38% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.33	0.23 - 0.43	0.04

Data Plot and Equation



Fitted Curve Equation: T = 0.35(X) - 1.67

R^2= 0.99

Senior Adult Housing - Attached
(252)

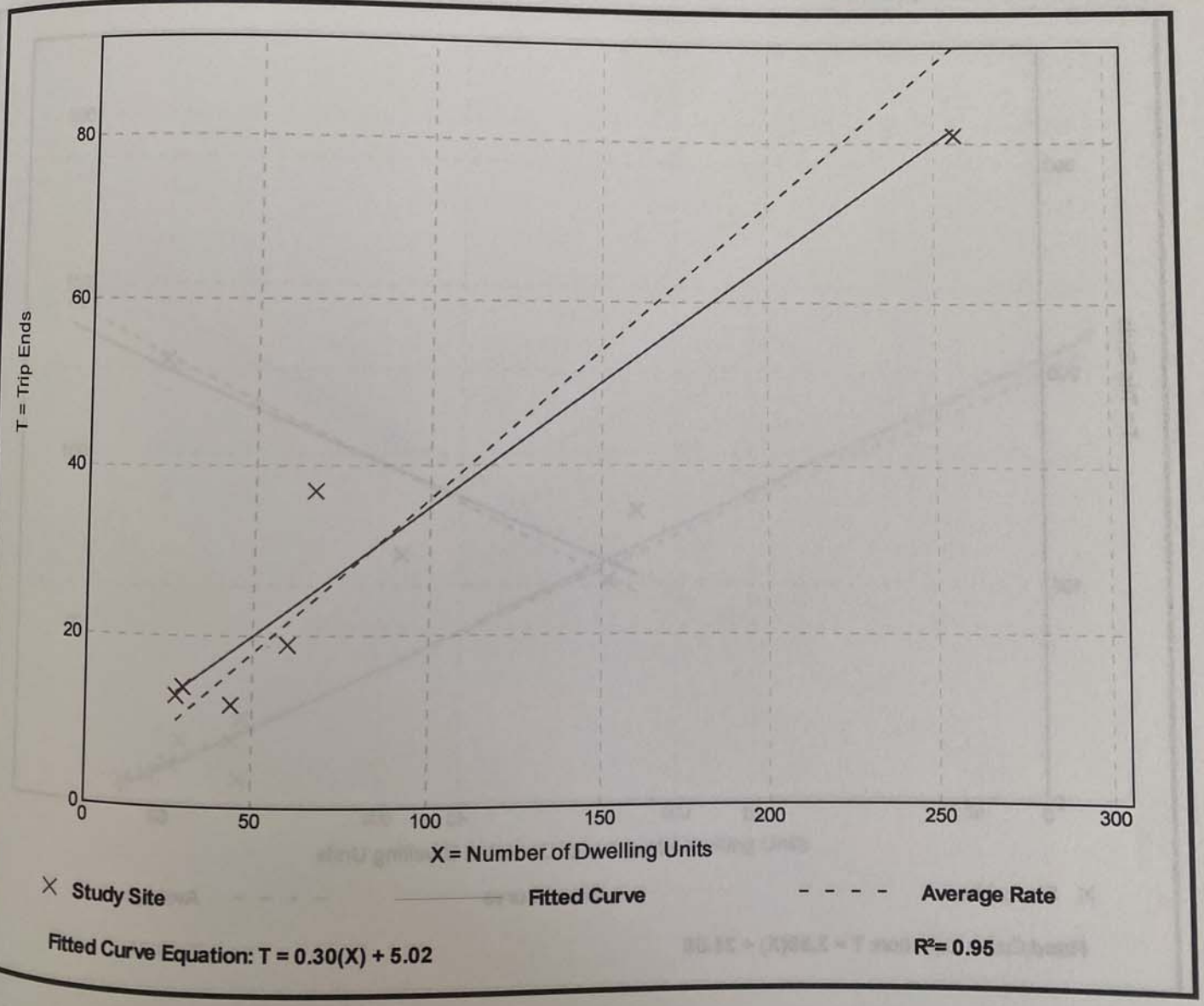
Vehicle Trip Ends vs: Dwelling Units
On a: Sunday, Peak Hour of Generator

Setting/Location: General Urban/Suburban
Number of Studies: 6
Avg. Num. of Dwelling Units: 81
Directional Distribution: 64% entering, 36% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.36	0.27 - 0.55	0.10

Data Plot and Equation



Fitted Curve Equation: T = 0.30(X) + 5.02

R^2= 0.95

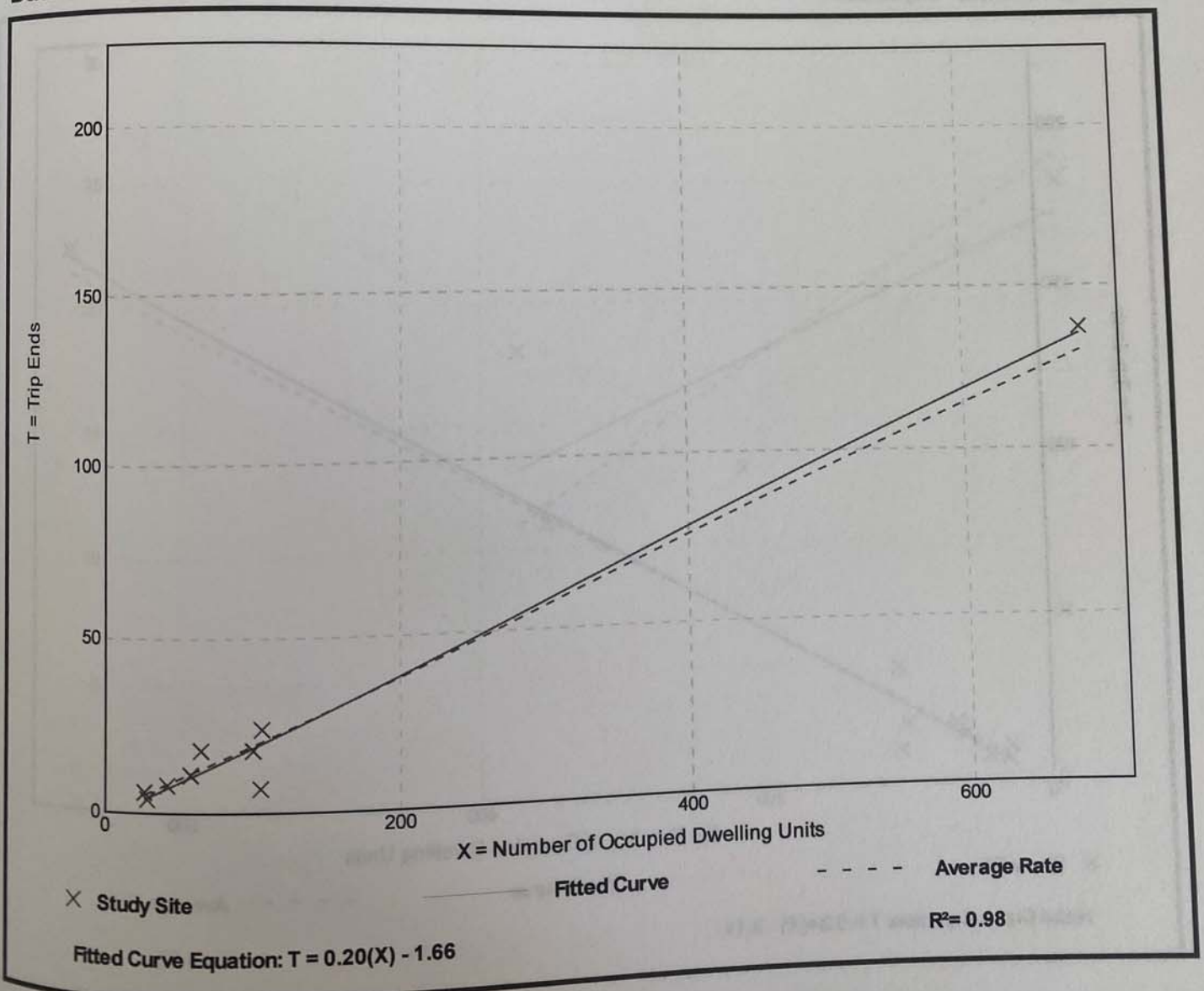
Senior Adult Housing - Attached
(252)

Vehicle Trip Ends vs: Occupied Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 9
Avg. Num. of Occupied Dwelling Units: 137
Directional Distribution: 35% entering, 65% exiting

Vehicle Trip Generation per Occupied Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.19	0.07 - 0.27	0.05

Data Plot and Equation



Fitted Curve Equation: T = 0.20(X) - 1.66

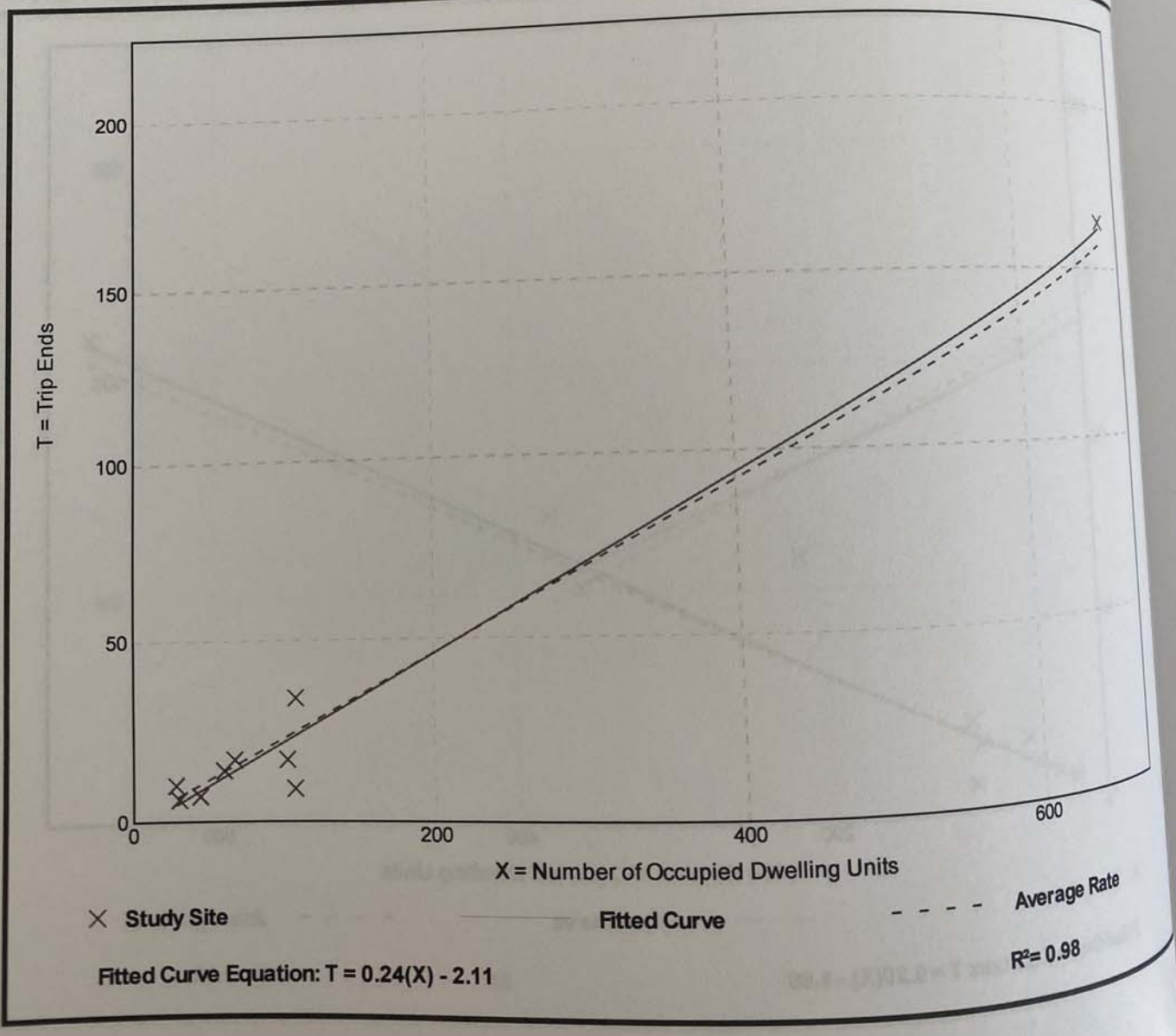
Senior Adult Housing - Attached
(252)

Vehicle Trip Ends vs: Occupied Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 9
Avg. Num. of Occupied Dwelling Units: 137
Directional Distribution: 60% entering, 40% exiting

Vehicle Trip Generation per Occupied Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.23	0.08 - 0.36	0.06

Data Plot and Equation



Fitted Curve Equation: T = 0.24(X) - 2.11

R^2 = 0.98

Senior Adult Housing - Attached
(252)

Vehicle Trip Ends vs: Occupied Dwelling Units
On a: Saturday, Peak Hour of Generator

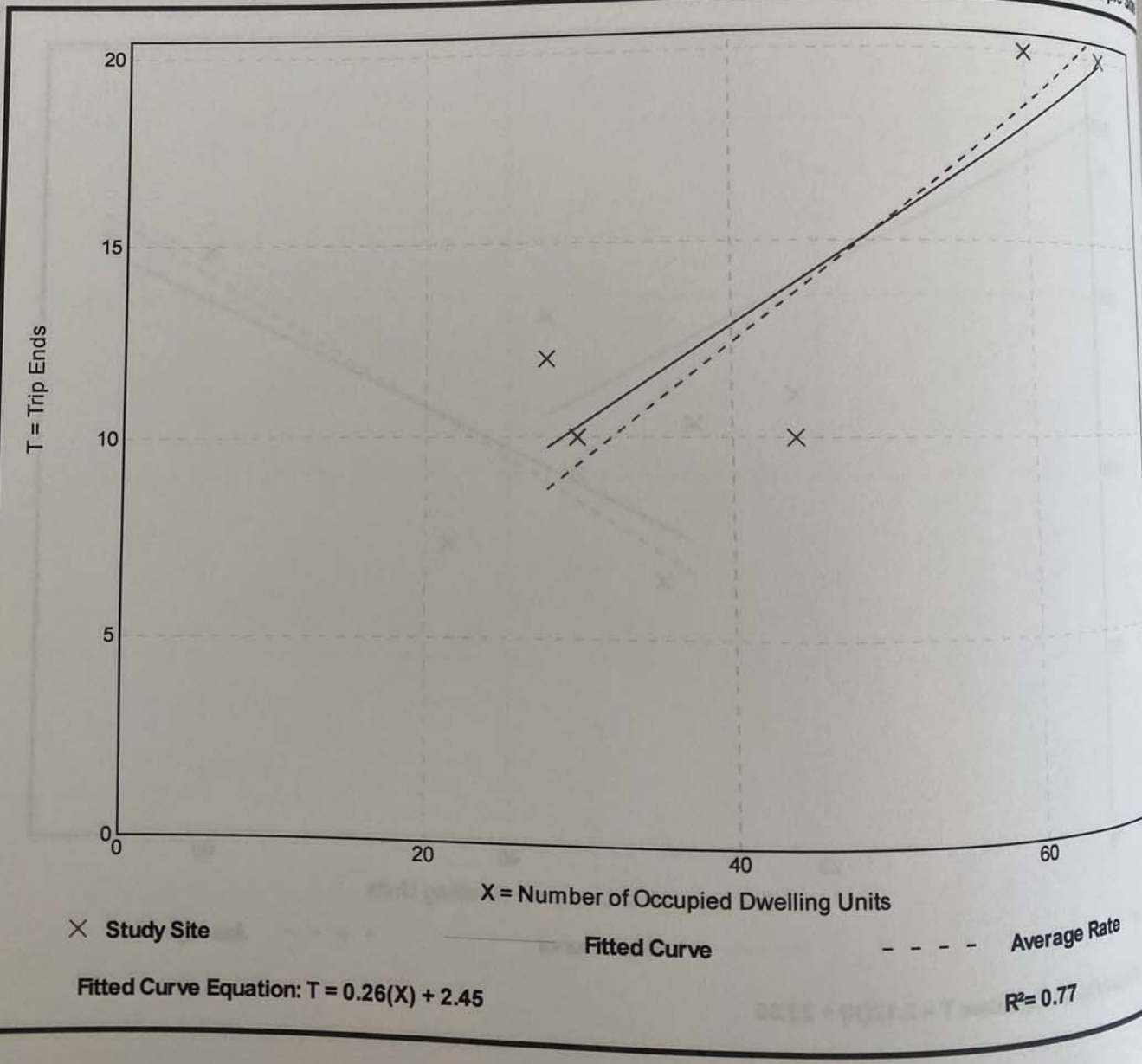
Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. Num. of Occupied Dwelling Units: 46
Directional Distribution: Not Available

Vehicle Trip Generation per Occupied Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.31	0.23 - 0.43	0.06

Data Plot and Equation

Caution – Small Sample Size



Fitted Curve Equation: T = 0.26(X) + 2.45

R^2= 0.77

Senior Adult Housing - Attached
(252)

Vehicle Trip Ends vs: Occupied Dwelling Units
On a: Sunday, Peak Hour of Generator

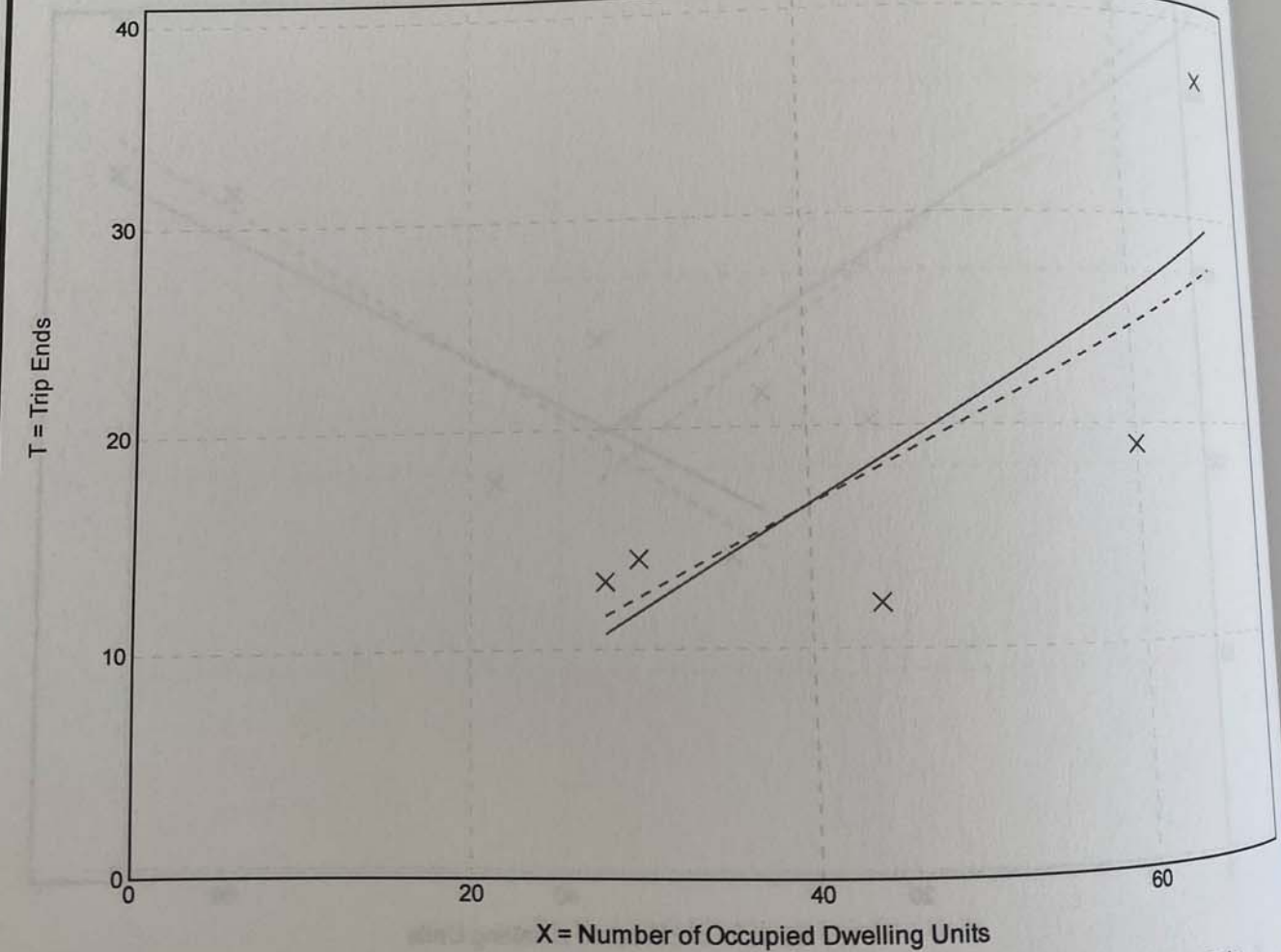
Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. Num. of Occupied Dwelling Units: 46
Directional Distribution: Not Available

Vehicle Trip Generation per Occupied Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.41	0.27 - 0.55	0.13

Data Plot and Equation

Caution – Small Sample Size



× Study Site ——— Fitted Curve - - - - Average Rate

Fitted Curve Equation: T = 0.48(X) - 2.76

R^2= 0.63

Appendix G

2027 Future Total Conditions Synchro Reports



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	526	0	44	751	0	76
Future Volume (Veh/h)	526	0	44	751	0	76
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	526	0	44	751	0	76
Pedestrians					9	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.1	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	65					
pX, platoon unblocked			0.83		0.83	0.83
vC, conflicting volume			535		1374	535
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			333		1348	333
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		100	87
cM capacity (veh/h)			1015		132	585

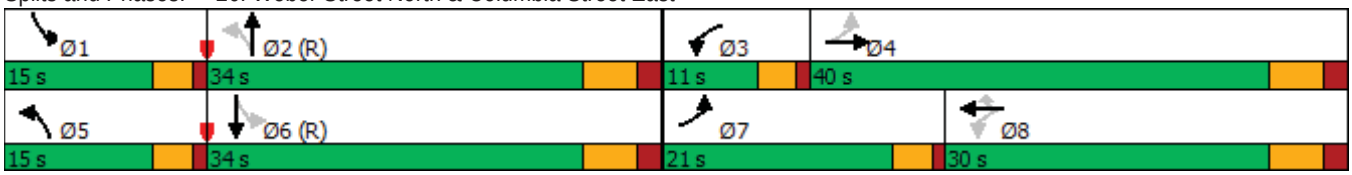
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	526	44	751	76
Volume Left	0	44	0	0
Volume Right	0	0	0	76
cSH	1700	1015	1700	585
Volume to Capacity	0.31	0.04	0.44	0.13
Queue Length 95th (m)	0.0	1.0	0.0	3.4
Control Delay (s)	0.0	8.7	0.0	12.1
Lane LOS		A		B
Approach Delay (s)	0.0	0.5		12.1
Approach LOS				B

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	50.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	95	370	229	515	177	212	351	180	331
Future Volume (vph)	95	370	229	515	177	212	351	180	331
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	9.0	30.0	9.0	30.0	30.0	9.5	34.0	9.0	34.0
Total Split (s)	21.0	40.0	11.0	30.0	30.0	15.0	34.0	15.0	34.0
Total Split (%)	21.0%	40.0%	11.0%	30.0%	30.0%	15.0%	34.0%	15.0%	34.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	1.0	2.0	1.0	2.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	-2.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max	Max	None	C-Max	None	C-Max
Act Effct Green (s)	44.5	36.0	42.1	36.5	34.5	43.7	30.8	43.1	30.5
Actuated g/C Ratio	0.44	0.36	0.42	0.36	0.34	0.44	0.31	0.43	0.30
v/c Ratio	0.12	0.43	0.31	0.74	0.25	0.27	0.43	0.24	0.33
Control Delay	15.4	19.3	18.8	37.1	5.0	18.4	25.8	17.9	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.4	19.3	18.8	37.1	5.0	18.4	25.8	17.9	27.3
LOS	B	B	B	D	A	B	C	B	C
Approach Delay		18.8		26.4			23.5		24.2
Approach LOS		B		C			C		C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 91 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.74	
Intersection Signal Delay: 23.4	Intersection LOS: C
Intersection Capacity Utilization 81.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 26: Weber Street North & Columbia Street East





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	95	591	229	515	177	212	482	180	364
v/c Ratio	0.12	0.43	0.31	0.74	0.25	0.27	0.43	0.24	0.33
Control Delay	15.4	19.3	18.8	37.1	5.0	18.4	25.8	17.9	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.4	19.3	18.8	37.1	5.0	18.4	25.8	17.9	27.3
Queue Length 50th (m)	10.0	33.8	26.1	88.7	0.0	24.9	34.7	20.7	27.8
Queue Length 95th (m)	18.9	48.6	41.8	#146.8	14.4	40.4	49.1	34.6	40.1
Internal Link Dist (m)		167.0		721.2			592.4		184.3
Turn Bay Length (m)	40.0		100.0			75.0		65.0	
Base Capacity (vph)	834	1366	747	694	719	784	1131	792	1088
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.43	0.31	0.74	0.25	0.27	0.43	0.23	0.33

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	370	221	229	515	177	212	351	131	180	331	33
Future Volume (vph)	95	370	221	229	515	177	212	351	131	180	331	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	1.00	0.85	1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	3550		1775	1900	1750	1775	3550		1775	3550	
Flt Permitted	0.18	1.00		0.32	1.00	1.00	0.45	1.00		0.35	1.00	
Satd. Flow (perm)	1775	3550		1775	1900	1750	1775	3550		1775	3550	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	95	370	221	229	515	177	212	351	131	180	331	33
RTOR Reduction (vph)	0	87	0	0	0	116	0	39	0	0	8	0
Lane Group Flow (vph)	95	504	0	229	515	61	212	444	0	180	356	0
Confl. Peds. (#/hr)	5		7	7		5	5		4	4		5
Confl. Bikes (#/hr)						1						
Heavy Vehicles (%)	0%	3%	2%	2%	3%	5%	1%	3%	4%	3%	6%	0%
Bus Blockages (#/hr)	0	2	0	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	42.1	34.8		41.5	34.5	34.5	38.5	28.0		37.9	27.7	
Effective Green, g (s)	42.1	36.8		41.5	36.5	34.5	38.5	30.0		37.9	29.7	
Actuated g/C Ratio	0.42	0.37		0.42	0.36	0.34	0.38	0.30		0.38	0.30	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	747	1306		736	693	603	683	1065		672	1054	
v/s Ratio Prot	0.01	0.14		c0.02	c0.27		c0.03	c0.12		0.03	0.10	
v/s Ratio Perm	0.04			0.11		0.03	0.09			0.07		
v/c Ratio	0.13	0.39		0.31	0.74	0.10	0.31	0.42		0.27	0.34	
Uniform Delay, d1	20.1	23.3		21.2	27.7	22.2	21.6	28.0		21.7	27.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.9		0.2	7.1	0.3	0.3	1.2		0.2	0.9	
Delay (s)	20.2	24.1		21.4	34.7	22.6	21.9	29.2		22.0	28.3	
Level of Service	C	C		C	C	C	C	C		C	C	
Approach Delay (s)		23.6			29.1			27.0			26.2	
Approach LOS		C			C			C			C	

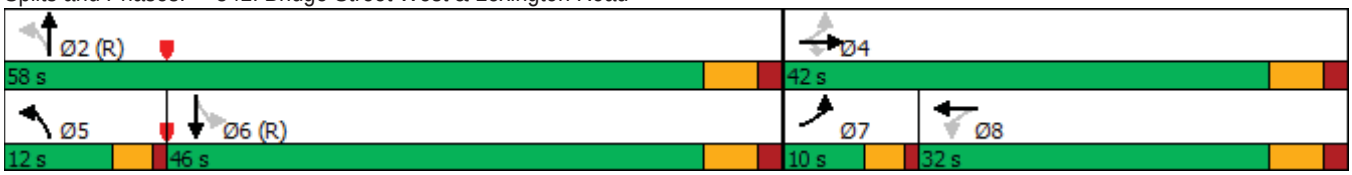
Intersection Summary			
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	30	490	279	171	367	188	112	19	219
Future Volume (vph)	30	490	279	171	367	188	112	19	219
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4			8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	4	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	5.0	8.0	8.0	8.0
Minimum Split (s)	9.0	32.0	32.0	32.0	32.0	9.0	46.0	46.0	46.0
Total Split (s)	10.0	42.0	42.0	32.0	32.0	12.0	58.0	46.0	46.0
Total Split (%)	10.0%	42.0%	42.0%	32.0%	32.0%	12.0%	58.0%	46.0%	46.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes		Yes	Yes
Recall Mode	None	Max	Max	Max	Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	38.0	38.0	36.0	32.0	32.0	54.0	54.0	42.1	42.1
Actuated g/C Ratio	0.38	0.38	0.36	0.32	0.32	0.54	0.54	0.42	0.42
v/c Ratio	0.04	0.68	0.36	0.30	0.62	0.20	0.30	0.03	0.38
Control Delay	19.9	31.7	7.1	28.9	35.3	12.5	7.9	17.3	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	31.7	7.1	28.9	35.3	12.5	7.9	17.3	20.9
LOS	B	C	A	C	D	B	A	B	C
Approach Delay		22.6			33.3		9.7		20.7
Approach LOS		C			C		A		C

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 22.2	Intersection LOS: C
Intersection Capacity Utilization 92.3%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 341: Bridge Street West & Lexington Road





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	490	279	171	375	188	286	19	263
v/c Ratio	0.04	0.68	0.36	0.30	0.62	0.20	0.30	0.03	0.38
Control Delay	19.9	31.7	7.1	28.9	35.3	12.5	7.9	17.3	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.9	31.7	7.1	28.9	35.3	12.5	7.9	17.3	20.9
Queue Length 50th (m)	3.6	78.2	7.2	26.4	65.0	17.8	15.4	2.1	32.6
Queue Length 95th (m)	9.4	113.3	24.6	44.4	96.6	29.4	30.1	6.4	52.5
Internal Link Dist (m)		853.1			403.2		296.6		638.7
Turn Bay Length (m)	45.0		45.0	20.0		80.0		40.0	
Base Capacity (vph)	674	722	772	568	608	958	947	746	700
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.68	0.36	0.30	0.62	0.20	0.30	0.03	0.38

Intersection Summary



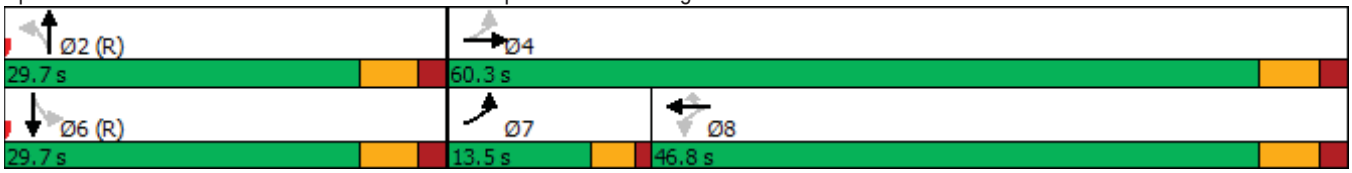
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	490	279	171	367	8	188	112	174	19	219	44
Future Volume (vph)	30	490	279	171	367	8	188	112	174	19	219	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.91		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Flt Permitted	0.26	1.00	1.00	0.32	1.00		0.45	1.00		0.58	1.00	
Satd. Flow (perm)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	30	490	279	171	367	8	188	112	174	19	219	44
RTOR Reduction (vph)	0	0	139	0	1	0	0	58	0	0	7	0
Lane Group Flow (vph)	30	490	140	171	374	0	188	228	0	19	256	0
Confl. Peds. (#/hr)	4		1	1		4	3		3	3		3
Heavy Vehicles (%)	0%	5%	3%	2%	4%	0%	6%	8%	3%	7%	5%	0%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	2	0	0	0	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	37.6	37.6	37.6	30.0	30.0		50.4	50.4		38.5	38.5	
Effective Green, g (s)	37.6	39.6	37.6	32.0	32.0		50.4	52.4		40.5	40.5	
Actuated g/C Ratio	0.38	0.40	0.38	0.32	0.32		0.50	0.52		0.40	0.40	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	667	752	658	568	608		894	864		718	668	
v/s Ratio Prot	0.00	c0.26			0.20		0.02	c0.14			c0.16	
v/s Ratio Perm	0.02		0.08	0.10			0.09			0.01		
v/c Ratio	0.04	0.65	0.21	0.30	0.62		0.21	0.26		0.03	0.38	
Uniform Delay, d1	21.4	24.6	21.2	25.6	28.8		14.3	13.1		17.9	21.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	4.4	0.7	1.4	4.6		0.1	0.7		0.1	1.7	
Delay (s)	21.4	28.9	21.9	26.9	33.4		14.4	13.9		18.0	22.6	
Level of Service	C	C	C	C	C		B	B		B	C	
Approach Delay (s)		26.2			31.4			14.1			22.3	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	24.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	201	349	595	171	59	4	178	0
Future Volume (vph)	201	349	595	171	59	4	178	0
Turn Type	pm+pt	NA	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	8			2		6
Permitted Phases	4			8	2		6	
Detector Phase	7	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	46.0	46.0	46.0	29.7	29.7	29.7	29.7
Total Split (s)	13.5	60.3	46.8	46.8	29.7	29.7	29.7	29.7
Total Split (%)	15.0%	67.0%	52.0%	52.0%	33.0%	33.0%	33.0%	33.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes				
Recall Mode	None	Max	Max	Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	56.3	56.3	43.4	43.4		25.7	25.7	25.7
Actuated g/C Ratio	0.63	0.63	0.48	0.48		0.29	0.29	0.29
v/c Ratio	0.18	0.35	0.75	0.18		0.14	0.35	0.42
Control Delay	7.6	9.1	26.4	2.7		25.1	28.0	3.3
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	7.6	9.1	26.4	2.7		25.1	28.0	3.3
LOS	A	A	C	A		C	C	A
Approach Delay		8.6	21.1			25.1		12.3
Approach LOS		A	C			C		B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 85	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 15.2	Intersection LOS: B
Intersection Capacity Utilization 120.2%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 345: West Site Access/Davenport Road & Lexington Road





Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	201	359	595	171	63	178	310
v/c Ratio	0.18	0.35	0.75	0.18	0.14	0.35	0.42
Control Delay	7.6	9.1	26.4	2.7	25.1	28.0	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.6	9.1	26.4	2.7	25.1	28.0	3.3
Queue Length 50th (m)	13.3	26.6	81.0	0.0	8.1	24.3	0.0
Queue Length 95th (m)	22.3	41.6	123.8	9.7	17.6	41.8	10.4
Internal Link Dist (m)		791.8	41.0		60.3		616.1
Turn Bay Length (m)						70.0	
Base Capacity (vph)	1110	1033	795	932	442	506	731
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.35	0.75	0.18	0.14	0.35	0.42

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	201	349	10	0	595	171	59	4	0	178	0	310
Future Volume (vph)	201	349	10	0	595	171	59	4	0	178	0	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	0.96		1.00		1.00	0.96	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.99		0.99	1.00	
Frt	1.00	1.00			1.00	0.85		1.00		1.00	0.85	
Flt Protected	0.95	1.00			1.00	1.00		0.96		0.95	1.00	
Satd. Flow (prot)	1775	1650			1650	1750		1550		1775	1650	
Flt Permitted	0.22	1.00			1.00	1.00		0.50		0.74	1.00	
Satd. Flow (perm)	1775	1650			1650	1750		1550		1775	1650	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	201	349	10	0	595	171	59	4	0	178	0	310
RTOR Reduction (vph)	0	1	0	0	0	89	0	0	0	0	221	0
Lane Group Flow (vph)	201	358	0	0	595	82	0	63	0	178	89	0
Confl. Peds. (#/hr)	14		11	11		14	12		5	5		12
Confl. Bikes (#/hr)						2						
Heavy Vehicles (%)	3%	2%	0%	0%	1%	4%	0%	0%	0%	7%	0%	2%
Bus Blockages (#/hr)	0	0	0	0	2	2	0	0	0	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	54.3	54.3			41.4	41.4		23.7		23.7	23.7	
Effective Green, g (s)	54.3	56.3			43.4	43.4		25.7		25.7	25.7	
Actuated g/C Ratio	0.60	0.63			0.48	0.48		0.29		0.29	0.29	
Clearance Time (s)	4.0	6.0			6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	1070	1032			795	843		442		506	471	
v/s Ratio Prot	0.02	c0.22			c0.36						0.05	
v/s Ratio Perm	0.09					0.05		0.04		c0.10		
v/c Ratio	0.19	0.35			0.75	0.10		0.14		0.35	0.19	
Uniform Delay, d1	11.1	8.1			18.9	12.7		23.9		25.5	24.3	
Progression Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.9			6.4	0.2		0.7		1.9	0.9	
Delay (s)	11.2	9.0			25.3	12.9		24.6		27.5	25.2	
Level of Service	B	A			C	B		C		C	C	
Approach Delay (s)		9.8			22.5			24.6			26.0	
Approach LOS		A			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	120.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	993	0	37	713	0	58
Future Volume (Veh/h)	993	0	37	713	0	58
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	993	0	37	713	0	58
Pedestrians					5	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	65					
pX, platoon unblocked			0.49		0.49	0.49
vC, conflicting volume			998		1785	998
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			485		2076	485
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			93		100	80
cM capacity (veh/h)			536		27	289

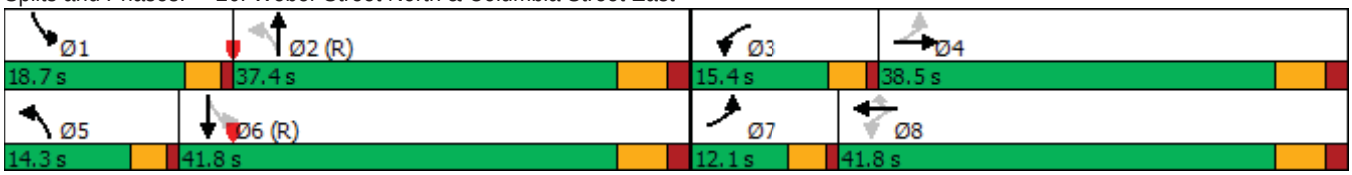
Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	993	37	713	58
Volume Left	0	37	0	0
Volume Right	0	0	0	58
cSH	1700	536	1700	289
Volume to Capacity	0.58	0.07	0.42	0.20
Queue Length 95th (m)	0.0	1.7	0.0	5.6
Control Delay (s)	0.0	12.2	0.0	20.6
Lane LOS		B		C
Approach Delay (s)	0.0	0.6		20.6
Approach LOS				C

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	150	688	292	494	197	253	704	209	813
Future Volume (vph)	150	688	292	494	197	253	704	209	813
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases	7	4	3	8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	7	4	3	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	5.0	8.0	8.0	5.0	8.0	5.0	8.0
Minimum Split (s)	9.0	38.5	9.0	38.5	38.5	9.5	37.4	9.0	37.7
Total Split (s)	12.1	38.5	15.4	41.8	41.8	14.3	37.4	18.7	41.8
Total Split (%)	11.0%	35.0%	14.0%	38.0%	38.0%	13.0%	34.0%	17.0%	38.0%
Yellow Time (s)	3.0	4.0	3.0	4.0	4.0	3.0	4.0	3.0	4.0
All-Red Time (s)	1.0	2.0	1.0	2.0	2.0	1.0	2.0	1.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	-2.0	0.0	0.0	-2.0	0.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	6.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	None	Max	Max	None	C-Max	None	C-Max
Act Effct Green (s)	42.5	34.5	49.3	37.9	35.9	45.8	35.5	50.2	37.8
Actuated g/C Ratio	0.39	0.31	0.45	0.34	0.33	0.42	0.32	0.46	0.34
v/c Ratio	0.22	0.85	0.37	0.76	0.28	0.34	0.82	0.26	0.74
Control Delay	19.4	41.5	21.4	40.7	4.9	20.4	39.8	18.4	35.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	41.5	21.4	40.7	4.9	20.4	39.8	18.4	35.6
LOS	B	D	C	D	A	C	D	B	D
Approach Delay		38.6		27.8			35.8		32.4
Approach LOS		D		C			D		C

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 110	
Offset: 14.3 (13%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 33.9	Intersection LOS: C
Intersection Capacity Utilization 99.1%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 26: Weber Street North & Columbia Street East





Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	150	989	292	494	197	253	969	209	905
v/c Ratio	0.22	0.85	0.37	0.76	0.28	0.34	0.82	0.26	0.74
Control Delay	19.4	41.5	21.4	40.7	4.9	20.4	39.8	18.4	35.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.4	41.5	21.4	40.7	4.9	20.4	39.8	18.4	35.6
Queue Length 50th (m)	18.7	98.3	40.0	93.3	0.0	32.4	96.5	26.0	88.1
Queue Length 95th (m)	31.6	124.4	60.5	132.6	15.1	50.0	#132.2	41.3	111.2
Internal Link Dist (m)		167.0		721.2			592.4		184.3
Turn Bay Length (m)	40.0		100.0			75.0		65.0	
Base Capacity (vph)	687	1158	795	654	703	739	1180	840	1227
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.85	0.37	0.76	0.28	0.34	0.82	0.25	0.74

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	688	301	292	494	197	253	704	265	209	813	92
Future Volume (vph)	150	688	301	292	494	197	253	704	265	209	813	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	6.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00	0.98	1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00	0.85	1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	3550		1775	1900	1750	1775	3550		1775	3550	
Flt Permitted	0.19	1.00		0.11	1.00	1.00	0.13	1.00		0.11	1.00	
Satd. Flow (perm)	1775	3550		1775	1900	1750	1775	3550		1775	3550	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	150	688	301	292	494	197	253	704	265	209	813	92
RTOR Reduction (vph)	0	45	0	0	0	133	0	35	0	0	8	0
Lane Group Flow (vph)	150	944	0	292	494	64	253	934	0	209	897	0
Confl. Peds. (#/hr)	4		17	17		4	6		8	8		6
Confl. Bikes (#/hr)			1									
Heavy Vehicles (%)	2%	1%	2%	1%	1%	1%	3%	2%	0%	1%	1%	0%
Bus Blockages (#/hr)	0	2	0	0	0	2	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	40.5	32.5		47.3	35.9	35.9	43.8	33.5		48.4	35.8	
Effective Green, g (s)	40.5	34.5		47.3	37.9	35.9	43.8	35.5		48.4	37.8	
Actuated g/C Ratio	0.37	0.31		0.43	0.34	0.33	0.40	0.32		0.44	0.34	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	653	1113		763	654	571	706	1145		781	1219	
v/s Ratio Prot	0.02	c0.27		c0.04	0.26		c0.03	c0.26		c0.03	0.25	
v/s Ratio Perm	0.07			0.12		0.04	0.11			0.09		
v/c Ratio	0.23	0.85		0.38	0.76	0.11	0.36	0.82		0.27	0.74	
Uniform Delay, d1	25.8	35.3		27.0	31.9	25.9	25.9	34.2		23.1	31.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	8.1		0.3	7.9	0.4	0.3	6.5		0.2	4.0	
Delay (s)	26.0	43.4		27.3	39.9	26.3	26.2	40.7		23.3	35.7	
Level of Service	C	D		C	D	C	C	D		C	D	
Approach Delay (s)		41.1			33.4			37.7			33.4	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	99.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	49	562	229	220	434	284	243	21	166
Future Volume (vph)	49	562	229	220	434	284	243	21	166
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4			8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	4	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	5.0	8.0	8.0	8.0
Minimum Split (s)	9.0	32.0	32.0	27.0	27.0	9.0	48.0	48.0	48.0
Total Split (s)	10.0	37.0	37.0	27.0	27.0	15.0	63.0	48.0	48.0
Total Split (%)	10.0%	37.0%	37.0%	27.0%	27.0%	15.0%	63.0%	48.0%	48.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes		Yes	Yes
Recall Mode	None	Max	Max	Max	Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	33.0	33.0	31.0	25.0	25.0	59.0	59.0	44.3	44.3
Actuated g/C Ratio	0.33	0.33	0.31	0.25	0.25	0.59	0.59	0.44	0.44
v/c Ratio	0.08	0.90	0.36	0.50	0.94	0.27	0.54	0.03	0.27
Control Delay	23.7	51.0	11.7	37.7	67.9	10.9	11.8	16.1	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	51.0	11.7	37.7	67.9	10.9	11.8	16.1	17.7
LOS	C	D	B	D	E	B	B	B	B
Approach Delay		38.7			58.0		11.5		17.5
Approach LOS		D			E		B		B

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 33.1	Intersection LOS: C
Intersection Capacity Utilization 96.8%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 341: Bridge Street West & Lexington Road





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	562	229	220	448	284	547	21	202
v/c Ratio	0.08	0.90	0.36	0.50	0.94	0.27	0.54	0.03	0.27
Control Delay	23.7	51.0	11.7	37.7	67.9	10.9	11.8	16.1	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.7	51.0	11.7	37.7	67.9	10.9	11.8	16.1	17.7
Queue Length 50th (m)	6.5	102.8	11.5	37.7	~92.5	25.0	46.3	2.3	22.4
Queue Length 95th (m)	14.5	#163.3	29.6	60.5	#151.7	38.9	73.3	6.5	37.9
Internal Link Dist (m)		853.1			403.2		296.6		638.7
Turn Bay Length (m)	45.0		45.0	20.0		80.0		40.0	
Base Capacity (vph)	585	627	643	443	476	1047	1018	787	739
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.90	0.36	0.50	0.94	0.27	0.54	0.03	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	562	229	220	434	14	284	243	304	21	166	36
Future Volume (vph)	49	562	229	220	434	14	284	243	304	21	166	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.92		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Flt Permitted	0.15	1.00	1.00	0.16	1.00		0.53	1.00		0.46	1.00	
Satd. Flow (perm)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	562	229	220	434	14	284	243	304	21	166	36
RTOR Reduction (vph)	0	0	100	0	2	0	0	46	0	0	8	0
Lane Group Flow (vph)	49	562	129	220	447	0	284	501	0	21	194	0
Confl. Peds. (#/hr)	5		3	3		5			2	2		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	1%	1%	1%	0%	2%	1%	1%	0%	1%	5%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	2	0	0	0	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	31.8	31.8	31.8	23.0	23.0		56.2	56.2		41.5	41.5	
Effective Green, g (s)	31.8	33.8	31.8	25.0	25.0		56.2	58.2		43.5	43.5	
Actuated g/C Ratio	0.32	0.34	0.32	0.25	0.25		0.56	0.58		0.44	0.44	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	564	642	556	443	475		997	960		772	717	
v/s Ratio Prot	0.00	c0.30			0.23		0.03	c0.30			0.12	
v/s Ratio Perm	0.02		0.07	0.12			0.13			0.01		
v/c Ratio	0.09	0.88	0.23	0.50	0.94		0.28	0.52		0.03	0.27	
Uniform Delay, d1	26.6	31.1	25.1	32.1	36.8		11.7	12.5		16.2	18.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	15.4	1.0	3.9	28.8		0.2	2.0		0.1	0.9	
Delay (s)	26.6	46.6	26.1	36.1	65.5		11.9	14.6		16.2	19.0	
Level of Service	C	D	C	D	E		B	B		B	B	
Approach Delay (s)		39.8			55.8			13.7			18.8	
Approach LOS		D			E			B			B	

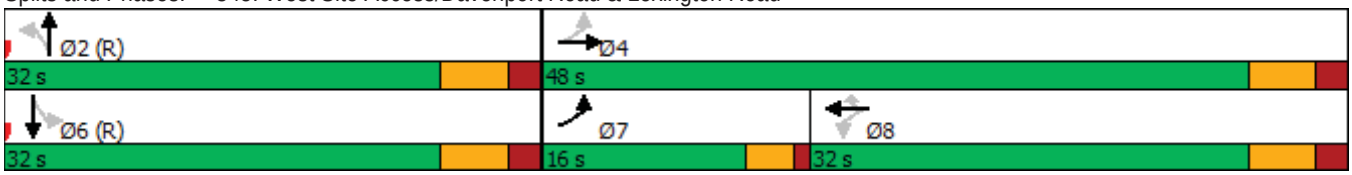
Intersection Summary			
HCM 2000 Control Delay	33.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	223	628	438	279	21	19	363	16
Future Volume (vph)	223	628	438	279	21	19	363	16
Turn Type	pm+pt	NA	NA	Perm	Perm	NA	Perm	NA
Protected Phases	7	4	8			2		6
Permitted Phases	4			8	2		6	
Detector Phase	7	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Minimum Split (s)	9.0	32.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (s)	16.0	48.0	32.0	32.0	32.0	32.0	32.0	32.0
Total Split (%)	20.0%	60.0%	40.0%	40.0%	40.0%	40.0%	40.0%	40.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	-2.0	-2.0		-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lead/Lag	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes		Yes	Yes				
Recall Mode	None	Max	Max	Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	44.0	44.0	29.7	29.7		28.0	28.0	28.0
Actuated g/C Ratio	0.55	0.55	0.37	0.37		0.35	0.35	0.35
v/c Ratio	0.23	0.79	0.71	0.34		0.07	0.58	0.54
Control Delay	10.0	21.9	30.2	3.8		17.9	25.9	5.0
Queue Delay	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	10.0	21.9	30.2	3.8		17.9	25.9	5.0
LOS	B	C	C	A		B	C	A
Approach Delay		19.1	19.9			17.9		14.0
Approach LOS		B	B			B		B

Intersection Summary	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 75	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 17.7	Intersection LOS: B
Intersection Capacity Utilization 101.2%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 345: West Site Access/Davenport Road & Lexington Road





Lane Group	EBL	EBT	WBT	WBR	NBT	SBL	SBT
Lane Group Flow (vph)	223	720	438	279	40	363	474
v/c Ratio	0.23	0.79	0.71	0.34	0.07	0.58	0.54
Control Delay	10.0	21.9	30.2	3.8	17.9	25.9	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.0	21.9	30.2	3.8	17.9	25.9	5.0
Queue Length 50th (m)	16.2	78.9	56.2	0.0	4.0	44.3	1.6
Queue Length 95th (m)	27.5	127.3	#100.6	14.6	10.3	70.8	20.3
Internal Link Dist (m)		791.8	41.0		60.3		616.1
Turn Bay Length (m)						70.0	
Base Capacity (vph)	976	914	613	825	542	621	875
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.23	0.79	0.71	0.34	0.07	0.58	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	223	628	92	0	438	279	21	19	0	363	16	458
Future Volume (vph)	223	628	92	0	438	279	21	19	0	363	16	458
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00			1.00	0.97		1.00		1.00	0.98	
Flpb, ped/bikes	1.00	1.00			1.00	1.00		1.00		0.99	1.00	
Frt	1.00	0.98			1.00	0.85		1.00		1.00	0.86	
Flt Protected	0.95	1.00			1.00	1.00		0.97		0.95	1.00	
Satd. Flow (prot)	1775	1650			1650	1750		1550		1775	1650	
Flt Permitted	0.25	1.00			1.00	1.00		0.69		0.73	1.00	
Satd. Flow (perm)	1775	1650			1650	1750		1550		1775	1650	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	223	628	92	0	438	279	21	19	0	363	16	458
RTOR Reduction (vph)	0	7	0	0	0	175	0	0	0	0	298	0
Lane Group Flow (vph)	223	713	0	0	438	104	0	40	0	363	176	0
Confl. Peds. (#/hr)	5					5	3		7	7		3
Confl. Bikes (#/hr)			2									
Heavy Vehicles (%)	0%	1%	0%	0%	1%	2%	0%	0%	0%	1%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	2	2	0	0	0	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)	42.0	42.0			27.7	27.7		26.0		26.0	26.0	
Effective Green, g (s)	42.0	44.0			29.7	29.7		28.0		28.0	28.0	
Actuated g/C Ratio	0.52	0.55			0.37	0.37		0.35		0.35	0.35	
Clearance Time (s)	4.0	6.0			6.0	6.0		6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0	3.0	
Lane Grp Cap (vph)	931	907			612	649		542		621	577	
v/s Ratio Prot	0.03	c0.43			0.27						0.11	
v/s Ratio Perm	0.09					0.06		0.03		c0.20		
v/c Ratio	0.24	0.79			0.72	0.16		0.07		0.58	0.31	
Uniform Delay, d1	12.1	14.3			21.5	16.8		17.3		21.2	18.9	
Progression Factor	1.00	1.00			1.00	1.00		1.00		1.00	1.00	
Incremental Delay, d2	0.1	6.8			7.0	0.5		0.3		4.0	1.4	
Delay (s)	12.2	21.1			28.6	17.3		17.6		25.2	20.3	
Level of Service	B	C			C	B		B		C	C	
Approach Delay (s)		19.0			24.2			17.6			22.4	
Approach LOS		B			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	101.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

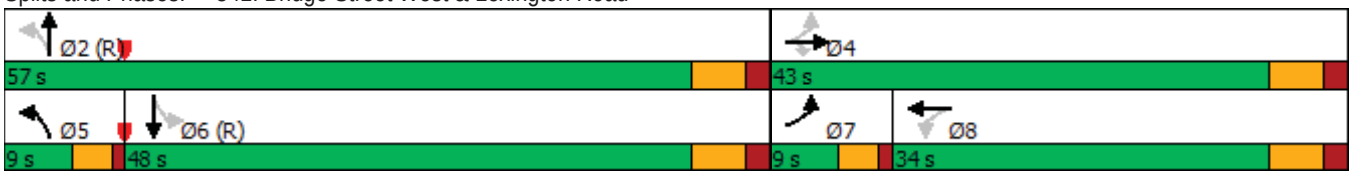
Appendix H

2029 Future Background and Future Total Conditions (Mitigated) Synchro Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	47	554	181	220	434	259	243	21	166
Future Volume (vph)	47	554	181	220	434	259	243	21	166
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4			8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	4	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	5.0	8.0	8.0	8.0
Minimum Split (s)	9.0	32.0	32.0	27.0	27.0	9.0	48.0	48.0	48.0
Total Split (s)	9.0	43.0	43.0	34.0	34.0	9.0	57.0	48.0	48.0
Total Split (%)	9.0%	43.0%	43.0%	34.0%	34.0%	9.0%	57.0%	48.0%	48.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes		Yes	Yes
Recall Mode	None	Max	Max	Max	Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	39.0	39.0	37.0	33.6	33.6	53.0	53.0	44.0	44.0
Actuated g/C Ratio	0.39	0.39	0.37	0.34	0.34	0.53	0.53	0.44	0.44
v/c Ratio	0.07	0.75	0.25	0.37	0.70	0.28	0.60	0.03	0.26
Control Delay	19.6	33.8	8.2	28.6	37.0	13.9	16.2	16.1	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	33.8	8.2	28.6	37.0	13.9	16.2	16.1	18.0
LOS	B	C	A	C	D	B	B	B	B
Approach Delay		27.0			34.3		15.5		17.8
Approach LOS		C			C		B		B

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 24.4	Intersection LOS: C
Intersection Capacity Utilization 96.3%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 341: Bridge Street West & Lexington Road





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	47	554	181	220	448	259	547	21	190
v/c Ratio	0.07	0.75	0.25	0.37	0.70	0.28	0.60	0.03	0.26
Control Delay	19.6	33.8	8.2	28.6	37.0	13.9	16.2	16.1	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	33.8	8.2	28.6	37.0	13.9	16.2	16.1	18.0
Queue Length 50th (m)	5.6	90.9	6.5	34.0	78.9	26.3	56.7	2.3	21.5
Queue Length 95th (m)	12.8	130.8	20.3	54.6	#123.7	41.3	88.7	6.5	36.3
Internal Link Dist (m)		853.1			403.2		296.6		638.7
Turn Bay Length (m)	45.0		45.0	20.0		80.0		40.0	
Base Capacity (vph)	692	741	728	596	639	940	919	781	731
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.75	0.25	0.37	0.70	0.28	0.60	0.03	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	554	181	220	434	14	259	243	304	21	166	24
Future Volume (vph)	47	554	181	220	434	14	259	243	304	21	166	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.92		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Flt Permitted	0.19	1.00	1.00	0.25	1.00		0.54	1.00		0.37	1.00	
Satd. Flow (perm)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	47	554	181	220	434	14	259	243	304	21	166	24
RTOR Reduction (vph)	0	0	79	0	1	0	0	47	0	0	5	0
Lane Group Flow (vph)	47	554	102	220	447	0	259	500	0	21	185	0
Confl. Peds. (#/hr)	5		3	3		5			2	2		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	1%	1%	1%	0%	2%	1%	1%	0%	1%	5%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	2	0	0	0	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	38.6	38.6	38.6	31.6	31.6		49.4	49.4		40.4	40.4	
Effective Green, g (s)	38.6	40.6	38.6	33.6	33.6		49.4	51.4		42.4	42.4	
Actuated g/C Ratio	0.39	0.41	0.39	0.34	0.34		0.49	0.51		0.42	0.42	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	685	771	675	596	638		876	848		752	699	
v/s Ratio Prot	0.00	c0.29			0.24		0.01	c0.30			0.11	
v/s Ratio Perm	0.02		0.06	0.12			0.13			0.01		
v/c Ratio	0.07	0.72	0.15	0.37	0.70		0.30	0.59		0.03	0.26	
Uniform Delay, d1	21.8	24.9	20.0	25.2	28.8		16.8	17.0		16.8	18.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	5.7	0.5	1.8	6.3		0.2	3.0		0.1	0.9	
Delay (s)	21.9	30.6	20.5	26.9	35.1		17.0	20.0		16.9	19.6	
Level of Service	C	C	C	C	D		B	B		B	B	
Approach Delay (s)		27.7			32.4			19.0			19.3	
Approach LOS		C			C			B			B	

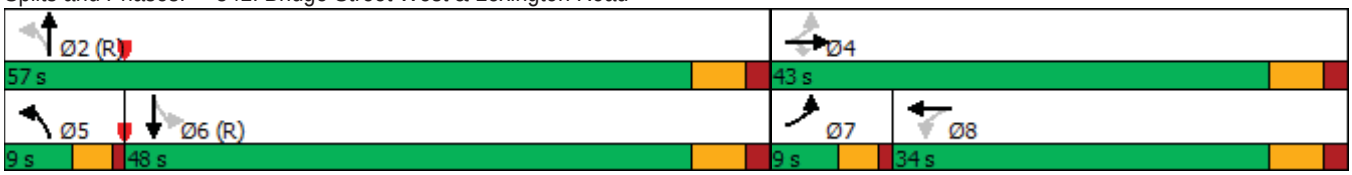
Intersection Summary			
HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	49	562	229	220	434	284	243	21	166
Future Volume (vph)	49	562	229	220	434	284	243	21	166
Turn Type	pm+pt	NA	Perm	Perm	NA	pm+pt	NA	Perm	NA
Protected Phases	7	4			8	5	2		6
Permitted Phases	4		4	8		2		6	
Detector Phase	7	4	4	8	8	5	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	8.0	8.0	5.0	8.0	8.0	8.0
Minimum Split (s)	9.0	32.0	32.0	27.0	27.0	9.0	48.0	48.0	48.0
Total Split (s)	9.0	43.0	43.0	34.0	34.0	9.0	57.0	48.0	48.0
Total Split (%)	9.0%	43.0%	43.0%	34.0%	34.0%	9.0%	57.0%	48.0%	48.0%
Yellow Time (s)	3.0	4.0	4.0	4.0	4.0	3.0	4.0	4.0	4.0
All-Red Time (s)	1.0	2.0	2.0	2.0	2.0	1.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	-2.0	0.0	-2.0	-2.0	0.0	-2.0	-2.0	-2.0
Total Lost Time (s)	4.0	4.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead			Lag	Lag	Lead		Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes	Yes		Yes	Yes
Recall Mode	None	Max	Max	Max	Max	None	C-Max	C-Max	C-Max
Act Effct Green (s)	39.0	39.0	37.0	31.8	31.8	53.0	53.0	44.0	44.0
Actuated g/C Ratio	0.39	0.39	0.37	0.32	0.32	0.53	0.53	0.44	0.44
v/c Ratio	0.07	0.76	0.31	0.39	0.74	0.30	0.60	0.03	0.28
Control Delay	19.6	34.4	8.4	29.9	39.9	14.3	16.2	16.1	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	34.4	8.4	29.9	39.9	14.3	16.2	16.1	17.8
LOS	B	C	A	C	D	B	B	B	B
Approach Delay		26.4			36.6		15.5		17.6
Approach LOS		C			D		B		B

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	
Natural Cycle: 95	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 24.8	Intersection LOS: C
Intersection Capacity Utilization 96.8%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 341: Bridge Street West & Lexington Road





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	562	229	220	448	284	547	21	202
v/c Ratio	0.07	0.76	0.31	0.39	0.74	0.30	0.60	0.03	0.28
Control Delay	19.6	34.4	8.4	29.9	39.9	14.3	16.2	16.1	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	19.6	34.4	8.4	29.9	39.9	14.3	16.2	16.1	17.8
Queue Length 50th (m)	5.9	92.7	8.5	34.0	78.9	29.3	56.7	2.3	22.4
Queue Length 95th (m)	13.1	133.4	24.2	54.6	#123.7	45.5	88.7	6.5	37.9
Internal Link Dist (m)		853.1			403.2		296.6		638.7
Turn Bay Length (m)	45.0		45.0	20.0		80.0		40.0	
Base Capacity (vph)	692	741	748	564	605	940	919	781	733
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.76	0.31	0.39	0.74	0.30	0.60	0.03	0.28

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	562	229	220	434	14	284	243	304	21	166	36
Future Volume (vph)	49	562	229	220	434	14	284	243	304	21	166	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	6.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00	0.97	1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.92		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Flt Permitted	0.17	1.00	1.00	0.23	1.00		0.53	1.00		0.38	1.00	
Satd. Flow (perm)	1775	1900	1750	1775	1900		1775	1650		1775	1650	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	49	562	229	220	434	14	284	243	304	21	166	36
RTOR Reduction (vph)	0	0	100	0	1	0	0	46	0	0	8	0
Lane Group Flow (vph)	49	562	129	220	447	0	284	501	0	21	194	0
Confl. Peds. (#/hr)	5		3	3		5			2	2		
Confl. Bikes (#/hr)									1			
Heavy Vehicles (%)	0%	2%	1%	1%	1%	0%	2%	1%	1%	0%	1%	5%
Bus Blockages (#/hr)	0	0	2	0	0	0	0	2	0	0	0	0
Turn Type	pm+pt	NA	Perm	Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases	7	4			8		5	2			6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	37.8	37.8	37.8	29.8	29.8		50.2	50.2		41.2	41.2	
Effective Green, g (s)	37.8	39.8	37.8	31.8	31.8		50.2	52.2		43.2	43.2	
Actuated g/C Ratio	0.38	0.40	0.38	0.32	0.32		0.50	0.52		0.43	0.43	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0		4.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	670	756	661	564	604		891	861		766	712	
v/s Ratio Prot	0.00	c0.30			0.24		0.02	c0.30			0.12	
v/s Ratio Perm	0.02		0.07	0.12			0.14			0.01		
v/c Ratio	0.07	0.74	0.19	0.39	0.74		0.32	0.58		0.03	0.27	
Uniform Delay, d1	22.5	25.7	20.9	26.5	30.4		16.9	16.4		16.3	18.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	6.5	0.7	2.0	7.9		0.2	2.9		0.1	0.9	
Delay (s)	22.5	32.3	21.5	28.6	38.3		17.1	19.3		16.4	19.2	
Level of Service	C	C	C	C	D		B	B		B	B	
Approach Delay (s)		28.8			35.1			18.5			19.0	
Approach LOS		C			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	26.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group